

F. B. BRADLEY.
 GUARD RAIL.
 APPLICATION FILED MAR. 25, 1911.

1,065,914.

Patented July 1, 1913.

4 SHEETS-SHEET 1.

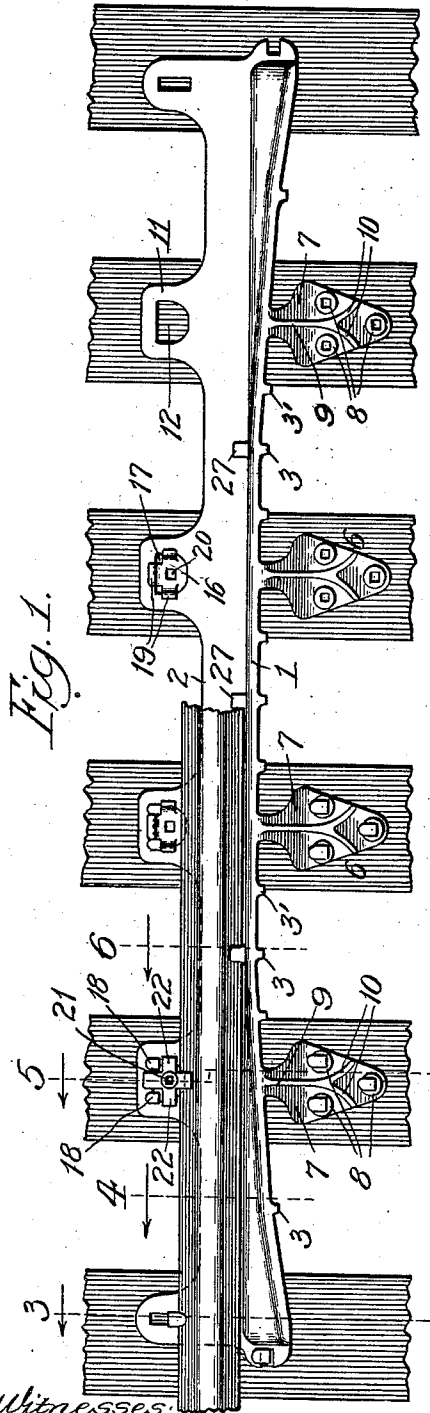


Fig. 1.

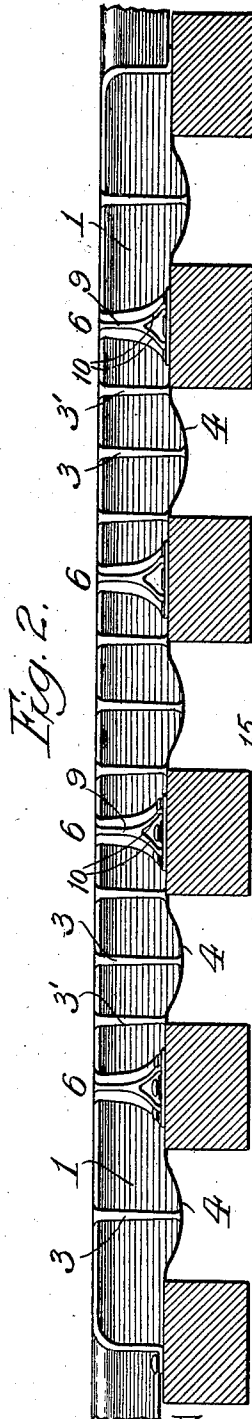


Fig. 2.

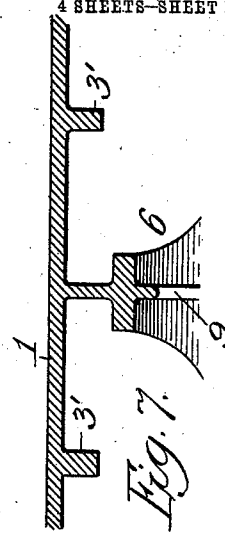


Fig. 7.

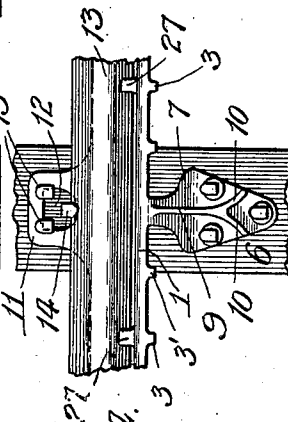


Fig. 14.

Witnesses:
 John Anders
 Henry A. Parks

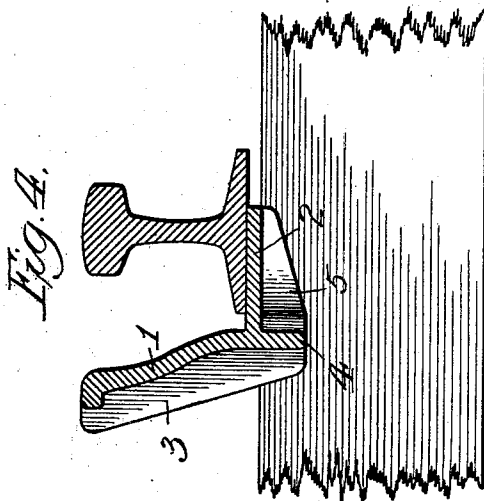
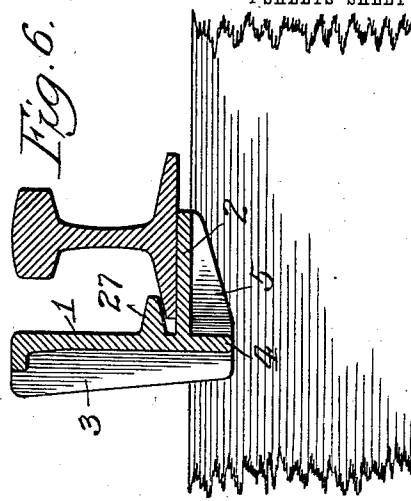
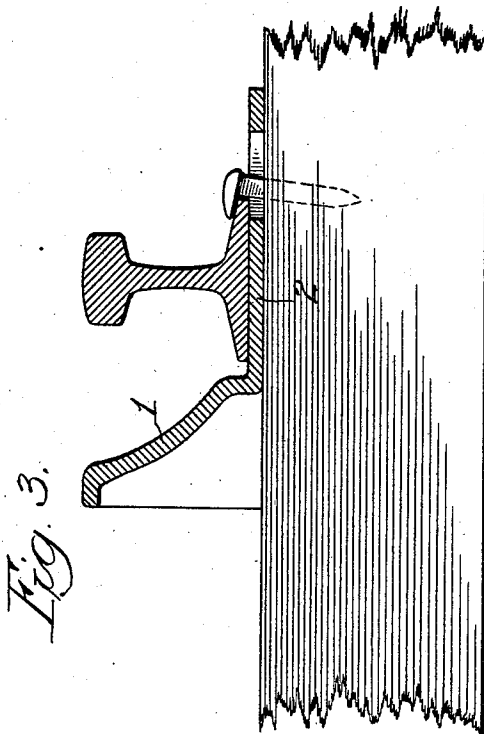
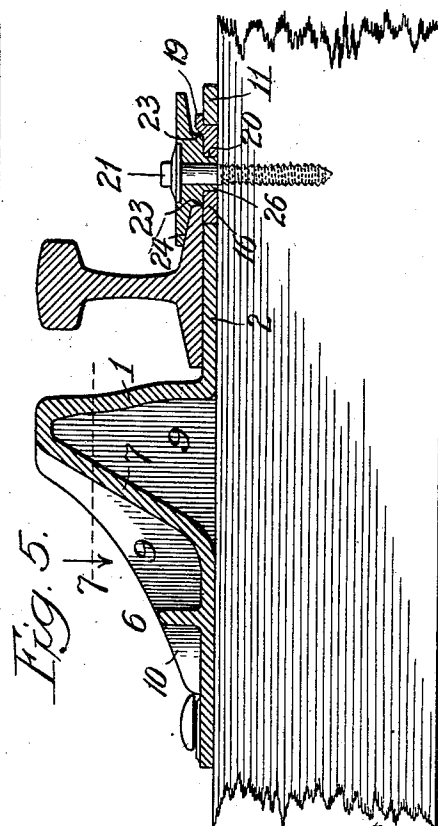
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4 SHEETS—SHEET 2.



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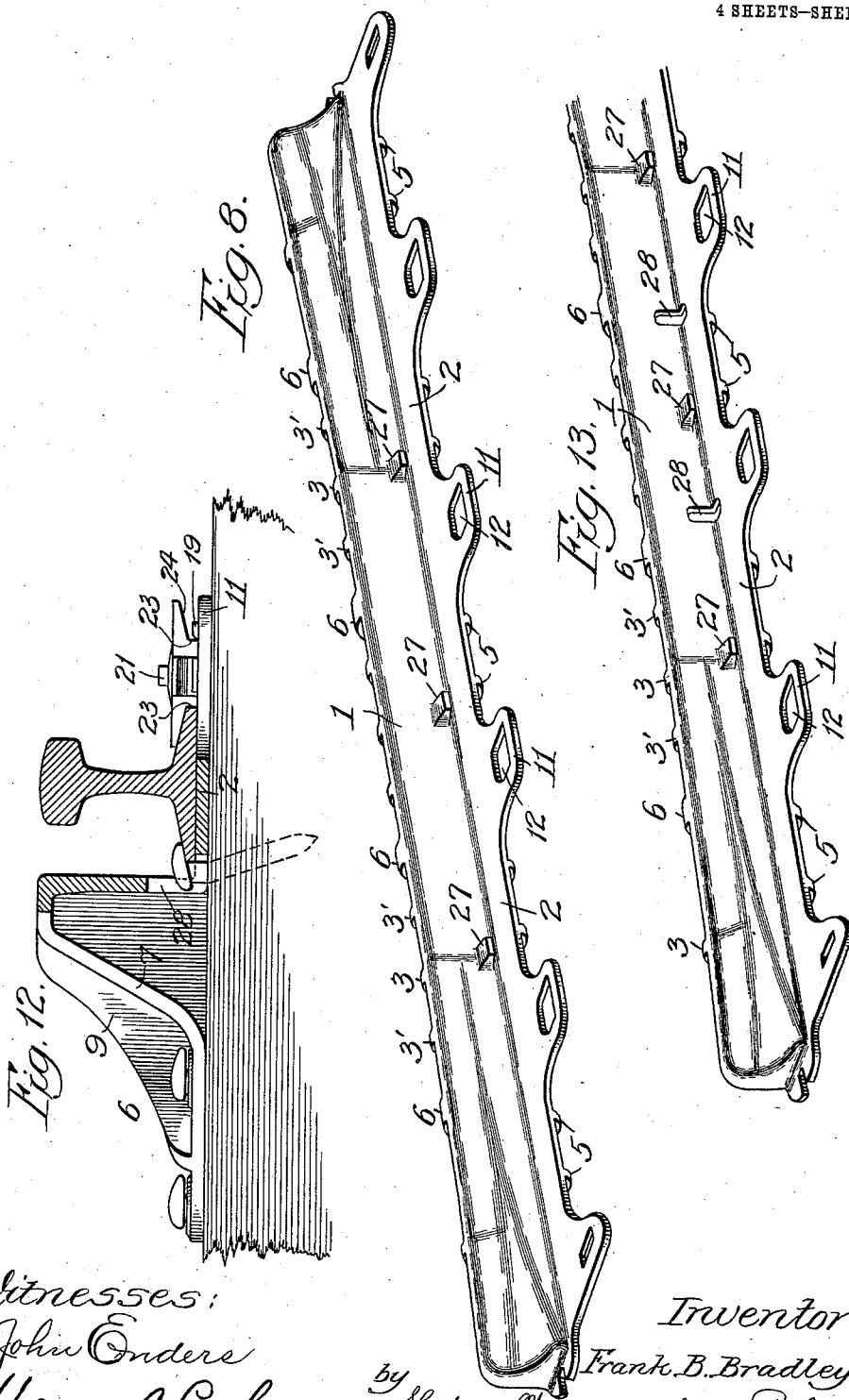
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 4 SHEETS—SHEET 3.



Witnesses:
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 4 SHEETS—SHEET 4.

Fig. 9.

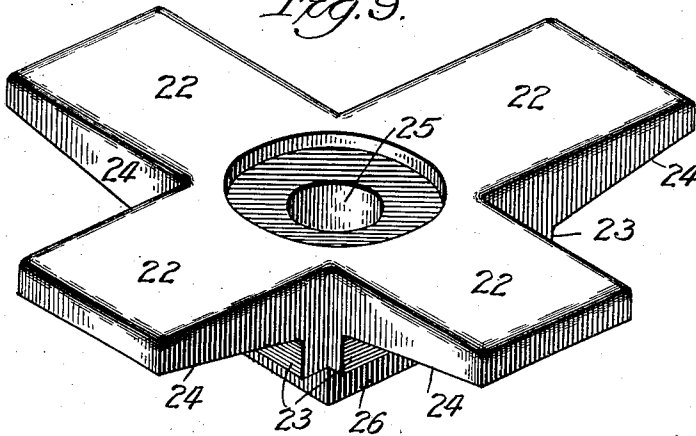


Fig. 10.

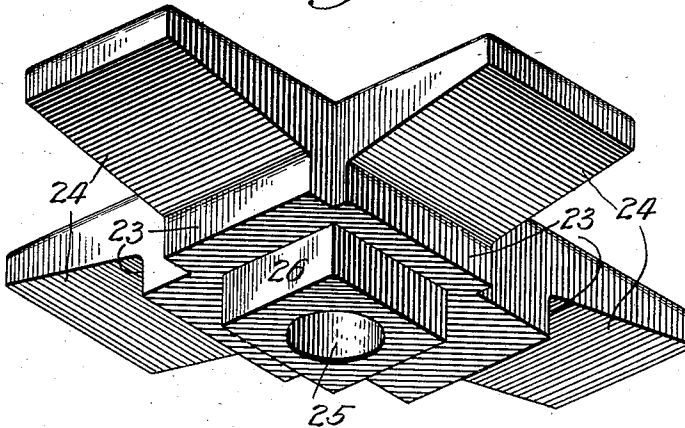
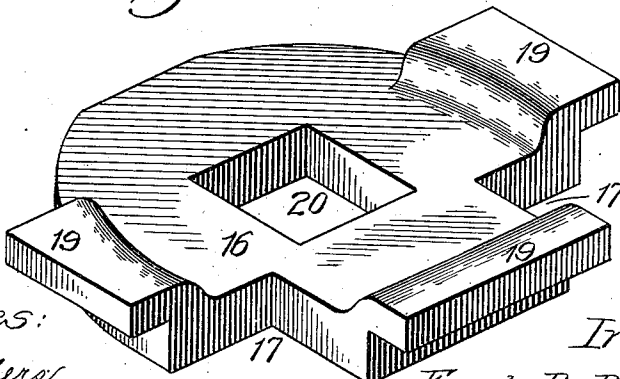


Fig. 11.



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UNITED STATES PATENT OFFICE.

FRANK B. BRADLEY, OF CHICAGO, ILLINOIS.

GUARD-RAIL.

1,065,914.

Specification of Letters Patent.

Patented July 1, 1913.

Application filed March 25, 1911. Serial No. 616,896.

To all whom it may concern:

Be it known that I, FRANK B. BRADLEY, 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 Guard-Rails, of which the following is a specification.

The object of my invention is to provide an improved guard rail to be used in accordance with the general practice in front or facing point switches, opposite frog points and around curves for the purpose of guiding or deflecting wheel flanges to avoid derailment. The general, in fact almost universal, practice at present is to use a piece of track rail of the same pattern as the running or traffic rails and the object of my invention is to provide a structure which shall be superior to the practice referred to. The invention described and claimed herein is an improvement upon the structure set forth in my application for United States Patent No. 987,611 granted Mar. 21, 1911.

In the drawings, Figure 1 is a plan view of my improved guard rail shown in connection with a traffic rail and ties. Fig. 2 is an elevation of the inner side of the structure shown in Fig. 1. Figs. 3, 4, 5 and 6 are cross sectional views upon the lines 3, 4, 5 and 6 shown in Fig. 1. Fig. 7 is a horizontal section on the line 7 of Fig. 5. Fig. 8 is a perspective view of the guard rail shown in Fig. 1 looking toward the outer side of the structure. Fig. 9 is a detail perspective view looking downward at a rail clamp forming part of the complete structure. Fig. 10 is a perspective view of the under side of the same rail clamp. Fig. 11 is a perspective view of a filler plate forming part of the complete structure. Fig. 12 is a cross sectional view of a slightly modified structure. Fig. 13 is a perspective view of the modified structure shown in Fig. 12. Fig. 14 is a plan view of part of a guard rail and traffic rail without the filler block and clamp shown in Figs. 9 to 11.

The general objects and nature of improved guard rails of the type shown and described in this application are fully set forth in my Patent No. 987,611 above referred to as are also the objects which I have overcome by the use of my improved in-

tegral guard rail and base plate. I, therefore, will confine the description and claims of this application to the improvements which I have made in the structure shown in my patent application referred to.

While I have illustrated a form of guard rail adapted to lie along a track rail opposite a frog, it will be understood that this particular form is selected for the purposes of explanation and that my invention is applicable to guard rails in various connections in which they are customarily used.

Referring to the drawings, it will be seen that the guard wall 1 is substantially vertical at its central portion as shown in Fig. 6 and that toward the ends, as shown in Figs. 5, 4 and 3, it assumes an inward inclination from the vertical, and that the end portions of the guard wall flare inwardly from the traffic rail at the ends according to the common practice.

The structure described and claimed in this application, like that set forth in my Patent No. 987,611, comprises a guard wall and a base plate 2 integral therewith and resting on the ties and underlying the base of the traffic rail. The base plate 2 is shown at the spaces between the ties, as illustrated in Fig. 4, as extending outwardly beneath the web of the traffic rail, and over the ties as extending outwardly beyond the base of the traffic rail.

Among the objects of the invention set forth herein is the distribution of the metal in such manner as to secure as great a degree of strength as possible with a minimum amount of metal, and also the provision of adjustable means for securing the outer base flange of the traffic rail to the ties. Such adjustable means are necessary by reason of the fact that the base flanges of traffic rails vary in width and by reason of the further fact that after a guard rail becomes worn it is necessary that it be moved nearer the traffic rail in order to keep the flange-way between the traffic and guard rails of the proper width. By extending the base plate of the guard rail beyond the base of the traffic rail over the ties, I am enabled to secure the guard rail against separation from the base rail by means of spikes driven through such suit-

able openings in the base plate outside of the traffic rail, and the base plate itself underlying the traffic rail over the ties serves the function of tie plates. Furthermore, the

5 part of the base plate which projects beneath the web of the traffic rail between the ties serves to give increased support to the traffic rail at those points.

The guard wall 1 is reinforced upon its
10 inner side by vertical ribs 3, 3', and the guard wall projects downwardly between the ties below the base plate 2 as shown at 4 in Figs. 2, 4 and 6. The vertical ribs 3
15 lying midway between the ties are continued to the lower edge of the wall 1 and are there continued in the form of transverse ribs 5 beneath the base plate 2. The ribs 3 and 5 in connection with the downward extensions 4 of the guard wall 1 impart great
20 rigidity to the guard wall and enable it to effectually resist the thrust of passing wheels. A further reinforcement of the guard wall 1 is formed by the braces or supports designated generally by the numeral 6. Each of the supports 6 comprises
25 a web 7 extending downwardly and inwardly from the upper part of the guard wall and terminating at its lower end in a horizontal part adapted to rest upon and
30 to be spiked to the tie. As illustrated, the horizontal part of the web 7 is provided with spike holes 8 of which there may be a greater or a less number as desired.

Extending outwardly from the guard wall
35 opposite each of the supports 6 is a transverse web 9 which intersects and extends inwardly beyond the web 7 of the brace or support 6. The web 9 in the form illustrated is at its inner part divided into two branches
40 10 as shown in Figs. 1 and 14. As also shown in those figures the web 7 is comparatively narrow at its upper part where it joins the guard wall 1 and widens out to the point where it contacts with the tie and
45 then tapers inwardly to its inner end.

As shown in Fig. 1, the outward projections 11 of the base plate which extend outwardly beyond the traffic rail are provided
50 with openings 12. These openings are of such form and size that they may be used in connection with spikes 14 bearing directly upon the base of the traffic rail 13 and spikes 15 bearing upon the base plate of the guard rail as shown in Fig. 14. When so used
55 the spikes 15 bear against the outer wall of the opening 12 thereby serving to hold the guard rail structure against displacement inwardly. The openings 12 are of such size that when used in connection with
60 spikes bearing directly upon the traffic rail base the spikes may be driven in different positions transversely of the track in order to bear upon traffic rail base flanges of different widths, and in order to permit adjustment of the guard rail necessitated by the

wearing away of the guard wall. When so used the mode of fastening the guard rail and traffic rails to the ties is quite similar to that set forth in my Patent No. 987,611. I find it preferable, however, to provide
70 means whereby the spikes which hold the traffic rail and guard rail in place may be surrounded by continuous metal bearings. If it were not for the fact that the bases of rails vary in width, and the fact that it is
75 necessary to adjust guard rails for wear, then all metal bearing around the spikes might be secured by simply providing the outward projections 11 of the guard rail with openings of the proper size to fit the
80 spikes used. The necessity of adjusting, however, renders such a course impracticable. I have, therefore, devised the structure about to be described.

Seated in the openings 12 are filler plates
85 16, one of which is illustrated in perspective in Fig. 11. These filler plates are designed to fit the openings 12 at all points except at the outer corners where recesses 17 are
90 formed for the purpose of receiving spikes 18 which are designed to bear against the outer wall of the opening 12 as shown in Fig. 1. The spikes 18 shown in Fig. 1 occupy the same position and perform the same function as the spikes 15 illustrated in
95 Fig. 14 and the recesses 17 in the filler plates 16 are formed to admit of their being driven in place for this purpose. The filler plates 16 are provided with overhanging lugs or
100 shoulders 19 which in the assembled structure overlie the upper surface of the extensions 11 of the base plate 2 as illustrated in Figs. 1, 5 and 11. The filler plates 16 are provided with a central aperture 20 preferably rectangular in form and somewhat
105 greater in diameter than the spikes 21.

The clamp for the outer flange of the base of the traffic rail is shown in detail in Figs. 9 and 10, and comprises a plurality of radiating arms 22. Each of the arms 22 is
110 provided upon its under side with a vertical shoulder 23, and with an extension 24, which projects outwardly beyond the vertical shoulder. The extensions 24 are inclined upon their under surfaces to correspond
115 with the inclination of the upper side of the base flange of the traffic rail. Each of the adjustable clamps is provided with a central opening 25 and upon its lower side is provided with a boss 26 of the form and size of
120 the aperture 20 in the filler plate 16. In assembling the structure as shown in Fig. 5, the filler plate 16 is placed in position in the guard rail and the rail clamp is then placed in position with its boss 26 engaging the
125 opening 20 in the filler plate. The shoulders 23 upon the arms 22 of the rotatably adjustable clamp vary in distance from the center of the clamp an eighth or three-sixteenths of an inch or such other distance as

is found suitable in practice. When the clamp is placed in position as shown in Fig. 5, it is positioned so that the shoulder 23 contacting with the outer edge of the base of the traffic rail fixes the traffic rail in proper position to leave the proper flange-way between the traffic rail and the guard wall. After the clamp and traffic rail are properly positioned the spike 21 is driven home. The varying distance of the shoulders 23 from the center of the rotatably adjustable clamp affords means for accommodating rails having base flanges of different widths, and when the guard wall becomes worn to an extent requiring adjustment, the spikes 18 are withdrawn and the spike 21 loosened sufficiently to permit the clamp to be rotated to a new position. The guard rail is then moved sufficiently to reduce the flange-way to the proper width, after which the spikes 18 are again driven, the spike holes having been previously plugged, and the spike 21 is again driven home to secure the parts in their new adjustment.

It will be seen that the filler plate 16 affords means in connection with the opening 12 for using my improved guard rail, as shown in Fig. 14, with spikes 15 holding the traffic rail directly to the ties, but without an all metal bearing for the spike, or for providing an all metal bearing around the traffic rail spike when the device is used in connection with the filler plate 16. This double mode of using the structure is a feature of utility as it admits of securing the guard and traffic rail in position by means always at hand, and also provides for a more secure fastening when filler plates can be had as is ordinarily the case. When the filler plate 16 is used as shown in Fig. 5, it may be regarded as forming a part of the extension 11 of the base plate 2. By using a removable filler plate 16, however, I am enabled, as above stated, to provide for fastening the traffic rail in position when necessary simply by the use of spikes.

For the purpose of securing the inner base flange of the traffic rail I have shown spurs 27 projecting outwardly from the guard wall 1 as illustrated in Figs. 1 and 6. In the modified structure shown in Figs. 12 and 13, I have also provided spike holes 28 in the guard wall 1 and base plate 2. As shown in Fig. 12 spikes may be driven through these openings from the inner side of the guard wall into engagement with the inner base flange of the traffic rail.

While I have illustrated and described a specific embodiment of my invention for the purpose of explaining the principle thereof, it will be understood that variations may be made in the specific mechanism without departing from the spirit of my invention.

While I have shown a specific form of adjustable clamp for securing the outer base

flange of the traffic rail in place, I believe that I am the first to use any form of adjustable clamp in the relation shown.

What I claim is:—

1. In combination, a traffic rail, ties, a guard rail structure comprising a guard wall, a base plate integral therewith and of sufficient width to underlie and project outwardly beyond the base flange of a traffic rail over the ties, said base plate being provided with openings, spikes passing through said openings outside of the traffic rail, filler plates adapted to be seated in and to engage the walls of said openings, a spike passing through each of said filler plates, and a rail clamp rotatably adjustable on each of said spikes.

2. In combination, a traffic rail, ties, a guard rail structure comprising a guard wall, a base plate integral therewith and of sufficient width to underlie and project outwardly beyond the base flange of a traffic rail over the ties, said base plate being provided with openings, spikes passing through said openings outside of the traffic rail, filler plates adapted to be seated in and to engage the walls of said openings, a spike passing through each of said filler plates, and a rail clamp rotatably adjustable on each of said spikes and having a boss seated in said filler plates.

3. In combination, a traffic rail, ties, a guard rail structure comprising a guard wall, a base plate integral therewith and of sufficient width to underlie and project outwardly beyond the base flange of a traffic rail over the ties, said base plate being provided with openings, spikes passing through said openings outside of the traffic rail, filler plates adapted to be seated in and to engage the walls of said openings, said filler plates having a shoulder adapted to overlie the upper surface of said base plate, a spike passing through each of said filler plates, and a rail clamp rotatably adjustable on each of said spikes.

4. A guard rail structure comprising a guard wall, a base plate integral therewith, an opening through said base plate, a filler plate seated in said opening and having a shoulder adapted to overlie the upper surface of said base plate, a spike passing through an opening in said filler plate, a rail clamp rotatably adjustable on said spike, said clamp having a plurality of radiating arms, each arm having a shoulder adapted to abut against the base of a traffic rail and also having a flange projecting beyond said shoulder and adapted to overlie the base of a traffic rail, said shoulders on said arms being located at different distances from the center of said clamp.

5. A guard rail structure comprising a guard wall, a base plate integral therewith, an opening through said base plate, a filler

plate seated in said opening and having a shoulder adapted to overlie the upper surface of said base plate, a spike passing through an opening in said filler plate, said
5 filler plate having spike openings adjacent its outer side to receive spikes engaging said base plate.

6. In combination with a traffic rail and ties, a guard rail structure comprising a
10 guard wall, a base plate adapted to rest on the ties and underlie a traffic rail, said guard wall projecting downwardly between the ties beneath said base plate, and transverse
15 strengthening ribs extending along the inner side of said guard wall and beneath said base plate.

7. In combination with a traffic rail and

ties, a guard rail structure comprising a guard wall, a base plate adapted to rest on the ties and underlie a traffic rail, supports
20 extending from said guard wall and adapted to be secured to the ties, each of said supports comprising a web extending downwardly and inwardly from said guard wall, and a transverse web extending inwardly
25 from said guard wall and intersecting and extending beyond said first named web.

In testimony whereof, I have subscribed my name.

FRANK B. BRADLEY.

Witnesses:

K. A. MANDERNACK,
G. E. WALBERT.

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