To all whom it may concern:

Be it known that I, Harry M. Steward, a citizen of the United States, residing in Somerville, in the county of Middlesex and State of Massachusetts, have invented an Improvement in Devices for Supporting and Spacing Guard-Rails, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts.

This invention relates to a device especially designed, among other uses, to be employed to secure a guard-rail in proper position with relation to the running-rail of a railway, and has for its object to provide a simple and efficient device for the purpose specified. For this purpose I employ a support for the guard-rail, preferably a metal plate which is screwed or otherwise permanently secured to the sleeper or tie and which will be hereinafter referred to as the "tie-plate," and provide the said tie-plate with an upright wall or abutment to which the guard-rail is secured, as will be described. The guard-rail is adjustable on the said tie-plate toward and from the running-rail and may be secured in its adjusted position by a bolt extended through the said guard-rail and abutment and through spacing means, preferably a filler-block, and one or more shims which are interposed between the said guard-rail and abutment. The guard-rail may be secured to the tie-plate by a holding device, which may also serve as a fastening device for the running-rail. These and other features of this invention will be pointed out in the claims at the end of this specification.

Figure 1 represents in end elevation a spacing device for guard-rails embodying this invention, the guard-rail and running-rail being shown in section; Fig. 2, a plan view of the device shown in Fig. 1, and Fig. 3 a detail of one of the shims shown in Figs. 1 and 2.

Referring to the drawings, a represents the running-rail, b the guard-rail employed therewith, and both of which may be of any suitable or desired construction, such as now commonly employed on railways, and particularly elevated railways. In accordance with this invention the guard-rail b is secured to a support c, preferably a metal plate, which is fastened, as by screws d, e, to the tie or sleeper f. The tie-plate c is provided with an upright wall g, preferably reinforced by one or more ribs or braces h, and in practice said tie-plate, upright wall, and braces may be made in one piece. The tie-plate c is designed to be practically permanently fastened to the tie or sleeper f, and the guard-rail b is movably on said tie-plate to adjust it with relation to the running-rail a to compensate for wear and is maintained rigid in its adjusted position, which may be accomplished, as shown, by means interposed between the said guard-rail and the abutment g and a suitable device or devices connecting said guard-rail and interposed means to said abutment. In the present instance the interposed means is shown as a metal filler-block j and a plurality of metal shims k, and the fastening device is shown as a bolt m, extended through the abutment g, the shims k, filler-block j, and web of the guard-rail, said bolt having its head preferably engaging a boss o on the rear surface of said upright wall or abutment g and having its opposite end provided with a nut p, which engages a washer 10, through which said bolt is extended and which engages the web of the guard-rail. The washer 10 may be, and preferably is, provided with a foot-piece or extension 12, which projects substantially at right angles to said washer and serves as a holding device for the inner side of the running-rail, over which it may project, as represented in Fig. 1, and which may be fastened to the tie by the lag-screws e, which extend through slots q in said foot or extension and through a clip r, which rests on the inner flange of the running-rail and on a raised portion s of the tie-plate.

The outer flange t of the running-rail may be secured to the tie f by spikes 18 or other devices in the usual manner.

From the above description it will be seen that the guard-rail b is not secured directly to the tie or sleeper, but is supported on a tie-plate, which is secured to the tie and is not disturbed when it is desired to adjust the guard-rail, thereby avoiding the tie or sleeper being filled with spike-holes and becoming what is practically known as "spike-killed." As a result, the life and effectiveness of the ties or sleepers supporting the guard-rail are materially prolonged. Furthermore, the guard-rail is not fastened to the running-rail by means of bolts extended through the web of the running-rail, as now commonly practiced, thereby saving the cost and labor of drilling
holes in the running-rail, avoiding weakening the running-rail, and enabling either the guard-rail or the running-rail to be replaced without disturbing the other rail.

5 With the construction herein shown the guard-rail may be adjusted with relation to the running-rail by merely slackening the screws \( e \) and nuts \( p \) and moving the guard-rail toward or from the running-rail, and when properly positioned it may be rendered fixed or stationary by setting up the nuts \( p \) and screws \( e \).

In the initial positioning of the guard-rail one or more shims \( k \) may be inserted between the abutment and the filler-block, or they may be removed therefrom, and when the guard-rail is properly backed it may be rigidly secured by setting up the nuts \( p \) and screws \( e \).

The slots \( 14 \) in the foot-plate or extension \( 12 \) enable the same to be moved without withdrawing the screws \( e \) from the tie or sleeper.

The guard-rail may be of any suitable form or construction; but I may prefer that herein shown, in which the greater portion of the wearing-surface is located on one side of a line through the center of the web of said rail, whereby the life of the guard-rail is materially prolonged. Furthermore, I may prefer to employ a guard-rail in which the web is inclined with relation to its base and head and in which the flange \( 20 \) on the opposite side of the web to the head is made wider than the flange \( 21 \) on the same side as the web. The upright wall or abutment \( g \) is preferably inclined, so as to be substantially parallel with the web of the guard-rail.

With the construction herein shown it will be noticed that various adjustments of the guard-rail may be effected by means of the shims, whereby enabling the filler-blocks to be made of one size for each pattern or kind of guard-rail.

It will be understood that while it may be preferred to use the kind or shape of guard-rail herein shown the invention is not limited in this respect, as it can be used equally well with the ordinary T-rail or any other form of rail. It will be understood that the shims \( k \) are provided with slots \( 22 \), which enable the said shims to be slipped over the bolt \( m \).

In the present instance the abutment or upright wall \( g \) is inclined with relation to the tie-plate; but it is not desired to limit the invention in this respect.

I claim:

1. In a device of the character described, in combination, a running-rail, a guard-rail, a support for said guard-rail provided with an upright wall or abutment, means interposed between said guard-rail and said abutment to space said guard-rail from said running-rail, and a bolt extended through said guard-rail, spacing means and abutment to secure said guard-rail to said abutment, substantially as described.

2. In a device of the character described in combination, a running-rail, a guard-rail, a support for said guard-rail provided with an upright wall or abutment, means interposed between said guard-rail and said abutment to space said guard-rail from said running-rail, a bolt extended through said guard-rail, spacing means and abutment to secure said guard-rail to said abutment, a washer on said bolt in engagement with said guard-rail and provided with a foot or extension having a slot and cooperating with said running-rail to hold the same in position, and means extended through said slot for securing said foot or extension in its operative position, substantially as described.

3. In a device of the character described, in combination, a running-rail, a guard-rail, a tie-plate provided with an upright wall or abutment and upon which said guard-rail is supported, spacing means interposed between said guard-rail and said abutment, a bolt extended through said abutment, spacing means, and said guard-rail, a washer on said bolt having a foot or extension provided with a slot, a nut on said bolt to engage said washer, and means extended through said slot and said tie-plate, substantially as described.

4. In a device of the character described, in combination, a tie-plate provided with an upright wall or abutment, a guard-rail resting on said tie-plate and movable thereon toward and from said abutment, spacing means interposed between said guard-rail and said abutment, spacing means to positively secure said guard-rail and spacing means to said abutment, substantially as described.

5. In combination, a tie, a tie-plate secured to said tie and provided with an upright wall or abutment, a running-rail supported upon said tie-plate, a guard-rail supported upon said tie-plate between said running-rail and said abutment and movable toward and from said running-rail, spacing means interposed between said guard-rail and said abutment, and means extended through said spacing means to fasten the said spacing means to said abutment and guard-rail, substantially as described.

6. In combination, a running-rail, an abutment, a guard-rail interposed between said running-rail and said abutment and movable toward and from said running-rail, and means to positively secure said guard-rail to said abutment, substantially as described.

7. In combination, a tie-plate provided with an upright wall or abutment, a running-rail resting on said tie-plate, a guard-rail interposed between said running-rail and said abutment and movable toward and from said
running-rail, and means to positively secure said guard-rail in its adjusted position to said abutment, substantially as described.

8. The tie-plate c having an upright wall g and reinforcing-braces h separated from each other and integral with said upright wall and tie-plate, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HARRY M. STEWARD.

Witnesses:

JAS. H. CHURCHILL,

J. MURPHY.