

June 5, 1928.

1,672,760

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CONCRETE FORM

Filed July 16, 1923

3 Sheets-Sheet 1

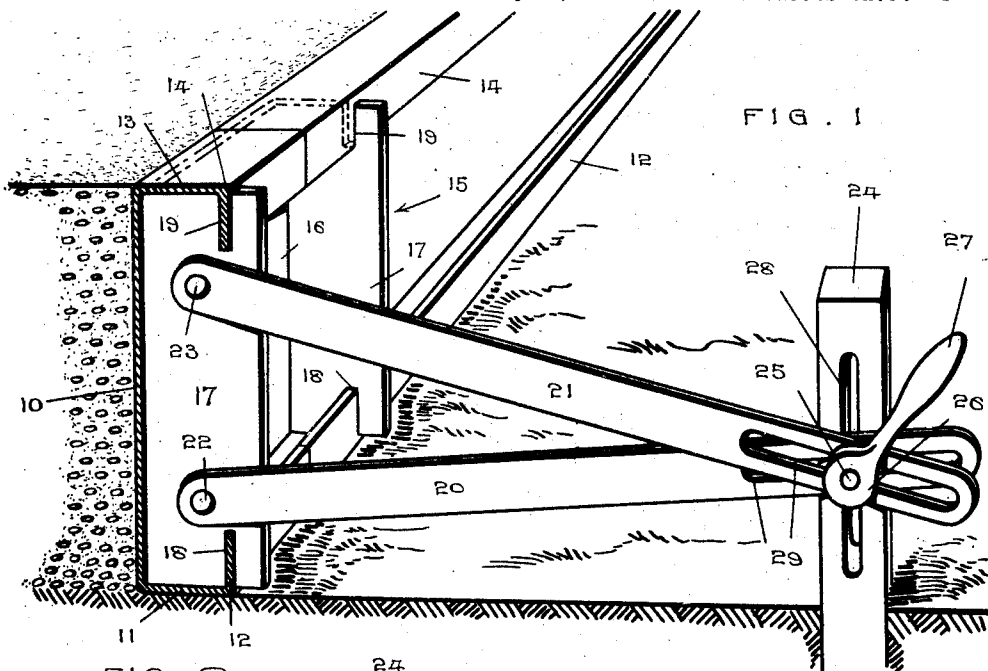


FIG. 1

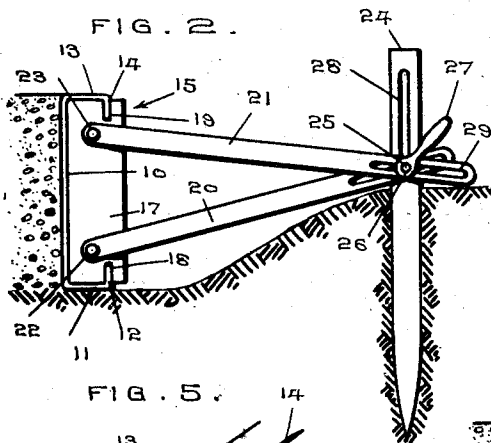


FIG. 2.

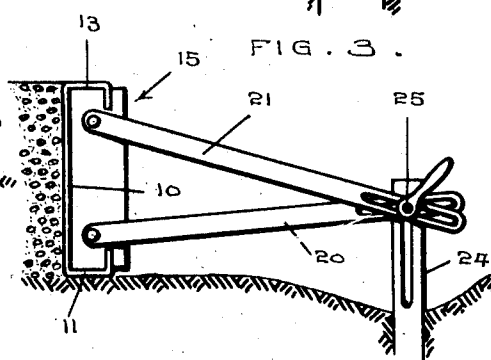


FIG. 3.

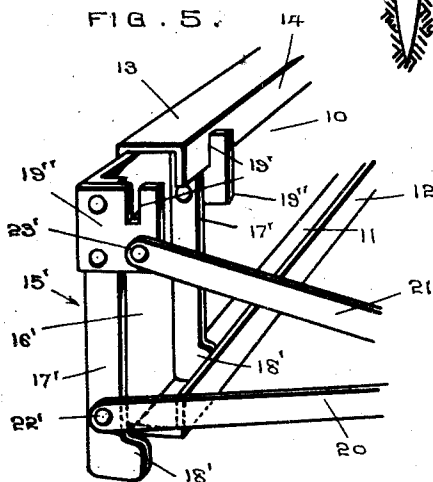


FIG. 5.

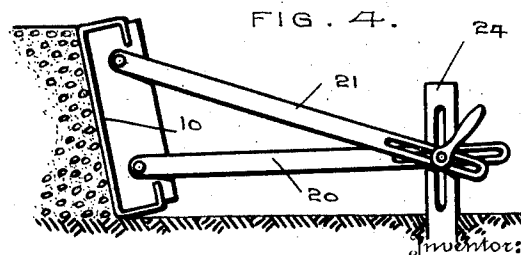


FIG. 4.

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FIG. 14.

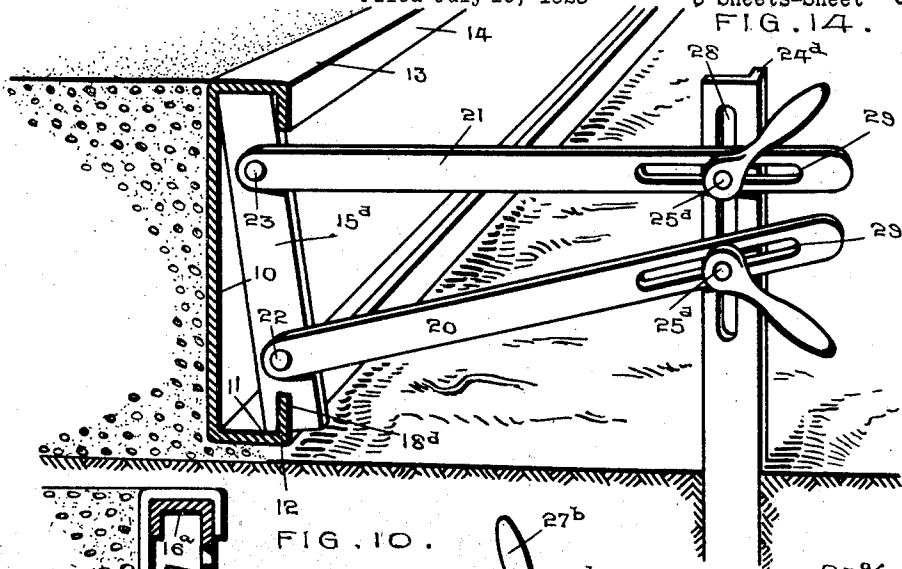


FIG. 10.

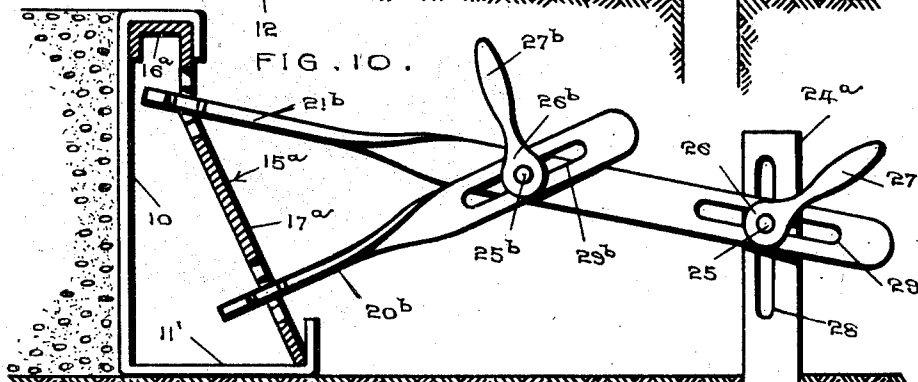
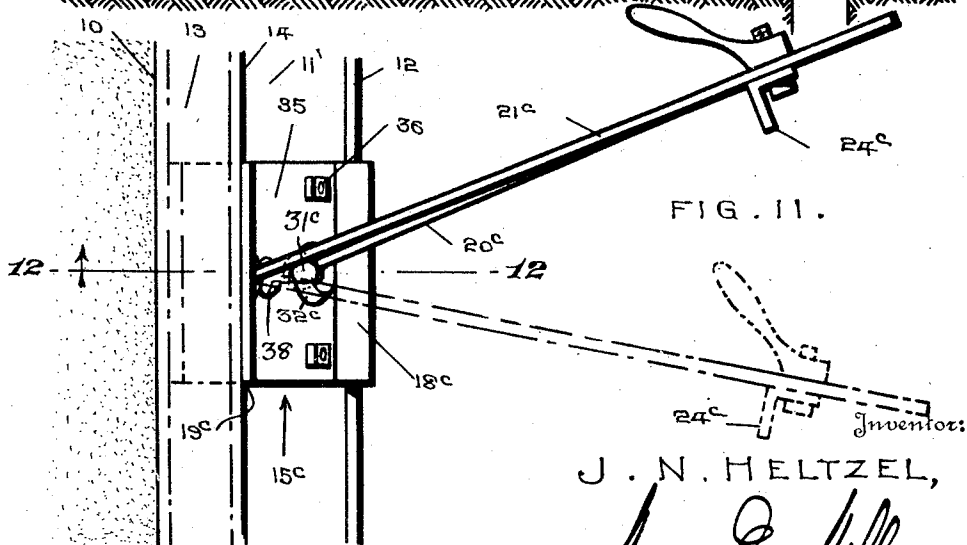


FIG. 11.



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CONCRETE FORM.

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The present invention relates to concrete forms, such as are employed for defining the edges or sides of concrete roads, sidewalks, curbs, and the like, and the invention aims to provide novel and improved means for anchoring the concrete form rail to the ground and for bracing such rail against displacement.

Another object of the invention is the provision of such anchoring and bracing means which is adjustable so as to be capable of use where the ground or road bed is uneven at the outer side of the rail, and also enabling the rail to be supported in upright and tilted positions.

A further object is the provision of a rail engaging member and an anchor stake to be driven into the ground at the outer side of the rail, in combination with novel bracing means connecting said member and stake to accomplish the desired results in a simple, practical and efficient manner.

A still further object is to provide an adjustable staking means whereby the rail may be set and permanently staked, but yet providing an adjusting means to readjust the rail to line and grade without disturbing the stake.

With the foregoing and other objects in view, which will be apparent as the description proceeds, the invention resides in the construction and arrangement of parts, as hereinafter described and claimed, it being understood that changes can be made within the scope of what is claimed, without departing from the spirit of the invention.

The invention is illustrated in the accompanying drawing, wherein—

Figure 1 is a perspective view of the improved device showing same in use with the rail upright and the ground or road bed level at the outer side of the rail.

Fig. 2 is an elevation of the device as used where there is an embankment or rise in the ground or road bed at the outer side of the rail.

Fig. 3 is an elevation of the device showing the same as used when there is a ravine or ditch at the outer side of the rail.

Fig. 4 is an elevation of the device showing the rail inclined or tilted inwardly.

Fig. 5 is a perspective view showing a modification.

Fig. 6 is a perspective view showing another modification.

Fig. 7 is a vertical section of the rail

engaging member of the device shown in Fig. 6.

Figs. 8 and 9 are sectional details taken on the respective lines 8—8 and 9—9 of Fig. 7.

Fig. 10 is a view, partly in section and partly in elevation, showing another variation.

Fig. 11 is a plan view of still another modified form of the device.

Fig. 12 is a section on the line 12—12 of Fig. 11.

Fig. 13 is a section on the line 13—13 of Fig. 12.

Fig. 14 is a perspective view of another modified form.

The rails, which define the edges or sides of the road, sidewalk, curb, or the like, are laid end to end, according to well known practice, and said rails are formed from sheet metal, having the vertical webs 10, the lower outwardly-extending base flanges 11 provided with the supplementary or secondary upwardly extending flanges 12, and the upper outwardly-extending tread flanges 13 provided with the depending supplementary or secondary flanges 14. These rails differ in cross-section, however, for different uses and conditions, and the present improvements can be modified accordingly, if necessary.

In carrying out the invention there is provided a rail engaging member 15 to be disposed at the outer side of the web 10 of a rail between the base flange 10 and tread flange or portion 13, whereby to assist in bracing the rail against collapsing under the weight of a rod finishing or surfacing machine that is run over the rails. The member 15 may be of different formations. As shown, it is of channel form, having the web 16 adjacent to the web 10 of the rail and the outwardly-extending vertical flanges 17. The flanges 17 abut the flanges 11 and 13 of the rail, and said flanges 17 have the slots 18 and 19 at their lower and upper ends, respectively, to engage the flanges 18 and 19, respectively, whereby to hold the member 15 in place against the rail. The member 15 is thus slidably assembled with the rail and can be slid longitudinally of the rail to different positions. The member 15 may also be used as a joint member at the adjacent ends of two rails, as seen in Fig. 1, whereby to hold the rail ends in alinement against lateral or vertical separation.

The member 15 is braced by a pair of

brace bars or arms 20 and 21 pivoted at their inner ends, as at 22 and 23, by rivets or otherwise, to one flange 17 of the member 15. The pivots 22 and 23 are located near the lower and upper slots 18 and 19, and said bars or arms extend outwardly away from the member 15 to a distance from the rail.

The bars 20 and 21 are secured to an anchor stake 24 which is driven into the ground or road bed, whereby to anchor the member 15 and rail to the ground, and to also fasten the bars 20 and 21 securely in place so as to brace the rail against transverse displacement. One or more braces may be used.

The bars 20 and 21 are clamped to the stake 24 by means of a bolt 25 engaging through the bars and stake, said bolt having a nut 26 thereon provided with a radial handle 27 for convenience in turning the nut to tighten or loosen the bolt. The stake 24 has a vertical slot 28 through which the bolt 25 extends, and the bars 20 and 21 are provided with longitudinal slots 29 at their outer ends through which said bolt extends. The bars thus cross one another and cross the stake, with the bolt 25 located at the intersection, and the bars and stakes are all slotted for the relative adjustment thereof both pivotally and slidably.

When the nut 26 is loosened, the stake 24 can be driven into the ground or road bed at a suitable point, the member 15 having been slid longitudinally of the rail to the desired position, and the stake 24 can be adjusted slightly toward or away from the rail within the limits of the slots 29. The stake is preferably driven down vertically, although it can be driven into the ground at an angle. Then, when the stake has been driven into place, the bolt 25 can be slid to the desired vertical position in the slot 28, and the nut 26 tightened to clamp the bars 20 and 21 and stake 24 together tightly. The bars are thus securely fastened to the stake to be anchored to the ground, so as to anchor the member 15 and rail to the ground, and to also brace said member and rail against transverse displacement. Not only can the stake be driven into the ground at different angles, but the brace bars or rods 20 and 21 can be disposed at different angles with the member 15 and stake, said bars being pivoted to the member 15 to be swung upwardly and downwardly, and the bars and stake having pivotal and slidable connections by means of the common pivot and clamping bolt.

As a result of the adjustment of the bars 20 and 21 and stake 24, the device can not only be used to advantage on level ground or road bed at the outer side of the rail, as seen in Fig. 1, but can be used where there is an embankment or rise in the ground or

road bed at the outer side of the rail, as seen in Fig. 2, or where there is a ditch or ravine at the outer side of the rail, as seen in Fig. 3. In fact, as shown in Fig. 3, the bolt 25 could be down lower, and even below the horizontal plane of the base flange 11 of the rail, and in some cases the bolt 25 may be above the horizontal plane of the tread flange 13 of the rail. The device also permits the rail to be supported and braced in a transversely inclined or tilted position, as seen in Fig. 4 when the edge or side of the road or sidewalk is to be of "battered" or inclined formation. Even after the stake is driven into place and the nut 26 is tightened to set the rail, the rail can be readjusted to line and grade without disturbing the stake by simply loosening the nut 26 so as to permit the braces or bars 20 and 21 to adjust themselves with the rail.

Fig. 5 shows a modification wherein the rail engaging member 15' has the web 16' and flanges 17', the lower portions of said flanges being shaped, as at 18', to fit between the web 10 and flange 12 of the rail, and plates or pieces 19' are riveted or otherwise secured to the flanges 17' at the upper end of the member 15' and have the slots 19' to engage the flange 14 of the rail. The lower bar 20 is pivoted, as at 22', to one flange 17', while the upper bar 21 is pivoted, as at 23', to the corresponding plate 19'.

Figs. 6, 7, 8 and 9 illustrate a third form of the invention. The rail engaging member 15^a has the inclined portion 17^a, the lower end of which is adapted to seat in the corner or bend between the base flange 11' and secondary flange 12 of the rail, the base flange 11' being wider than the tread flange 13, as shown. The member 15^a is provided at the upper end of the portion 17^a with a head 16^a to fit snugly under and against the flange 13 between the web 10 and flange 14, whereby the member 15^b braces the rail. Offset plates or pieces 18^a and 19^a are riveted or otherwise secured to the member 15^a near the lower and upper ends thereof, to overlap the flanges 12 and 14 on the outside, whereby to assist in holding the member 15^a in position.

The brace bars 20^a and 21^a have the slots 29 to engage the clamping bolt 25 which extends through the vertical slot 28 of the stake 24^a, a nut 26 being threaded on the bolt, the same as in the constructions hereinbefore described, for clamping the bars to the stake. The stake 24^a is composed of angle iron as shown.

The bars or braces 20^a and 21^a are connected by detachable and pivot joints with the member 15^a. Thus, the bars are provided near their inner ends with notches 30 in their opposite edges providing the portions 31 of reduced width and of circular outline

between said notches. The member 15^a has vertical slots 32 therein near its upper and lower ends, and circular openings 33 between the ends of said slots. The bars 20^a and 21^a are twisted intermediate their ends, as at 34, whereby the opposite end portions of the bars are disposed in planes at right angles with one another.

When the bars 20^a and 21^a are detached from the stake, said bars can be turned at right angles about their axes, so that the inner ends of the bars are in a vertical plane, thereby permitting the inner ends of the bars to be inserted into the vertical slots 32. The bars are then turned, whereby to lock the inner end portions of the bars behind the member 15^a with the circular portions 31 fitting in the openings 33 to provide flexible or universal joints between the bars and rail engaging member, permitting the bars to be swung or adjusted upwardly and downwardly to different angles and also enabling said bars to be adjusted to different angles relatively to the rail longitudinally of the rail. The bars are clamped to the stake 24 by the bolt 25, after the stake has been driven into place and the braces or bars adjusted. The bars are thus securely fastened to the stake, and this will also prevent the bars from turning in the openings 33, thereby retaining the bars in engagement with the member 15^a. The bars can be adjusted relatively to the member 15^a and detached from said member, when the bars are loosened or detached from the stake, respectively. The loosening of the bolt 25 will permit the bars to slide and swing on the bolt 25, and when the bars are completely detached from the stake, the bars can be turned in order to withdraw the inner ends thereof out of the slots 32.

Fig. 10 shows the rail engaging member 15^a without the plates 18^a and 19^a, and the brace or bars 20^b and 21^b are detachably and pivotally connected with said member in the same manner as shown in Figs. 6 to 8, inclusive. The bar 21^b extends across and is secured to the stake 24^a by means of the bolt 25, and the bar 20^b extends across the bar 21^b between the stake and rail. The bar 20^b has a longitudinal slot 29^b receiving a bolt 25^b carried by the bar 21^b, and a nut 26^b is threaded on said bolt and has a handle 27^b similar to the nut 26.

Figs. 11, 12 and 13 show the rail engaging member 15^c composed of the inclined plates 17^c and 35 fastened together detachably by the bolts 36, the lower end of the plate 17^c being adapted to seat in the corner or bend between the flanges 11' and 12 of the rail, and said plate 17^c having the head 16^c to fit between the web 10 and flange 14 of the rail under and against the flange 13. The lower and upper ends of the plate 35 are offset, as

at 18^c and 19^c, to overlap the flanges 12 and 14 on the outside.

The bars 20^c and 21^c, which are clamped to the stake 24^c in the same manner as hereinbefore described, have the balls 31^c at their inner ends to provide for ball and socket connections between said bars and the rail engaging member 15^c. The plates 17^c and 35 have opposite recessed or socket portions 32^c receiving the balls 31^c between them, to provide the ball and socket connections, and the portions 32^c of the outer plate 35 having openings 33^c through which the bars extend to permit said bars to be swung vertically and horizontally relatively to the member 15^c. The plate 35 has a slot 37 extending at its ends to the openings 33^c, and provided between its ends with an enlarged opening 38, in order that the bars can be detached from the member 15^c when the plate 35 is loosened or detached from the plate 17^c. The slot 37 enables the bars to be slid therein and the opening 38 is sufficiently large for the passage of the balls 31^c.

Fig. 14 shows the bars or braces 20 and 21 clamped by separate bolts 25^a to the stake 24^a, whereby the bars can be adjusted independently. This arrangement also enables the rail to be supported above the road bed or surface, as shown, the bars 20 and 21 forming a supporting bracket to support the rail from the stake. The rail engaging member 15^d to which the bars are pivoted, as at 22 and 23, respectively, has its upper end fitting between the web 10 and flange 14 of the rail under and against the flange 13, with the lower end of the member 15^d provided with a slot 18^d to engage the flange 12.

Having thus described the invention, what is claimed as new is:—

1. A device of the character described comprising a rail engaging member adapted to be disposed between the base and tread flanges of a concrete form rail and so formed that its upper extremity bears upwardly and slidably against the tread flange and that its lower extremity bears downwardly and slidably on the base flange, an anchor member, and a brace bar pivotally connected with said members and slidably connected with one of them.

2. A device of the character described comprising a rail engaging member adapted to be disposed between the base and tread flanges of a concrete form rail and so formed that its upper extremity bears upwardly and slidably against the tread flange and that its lower extremity bears downwardly and slidably on the base flange, an anchor stake, and a brace bar pivotally connected with said member and pivotally and slidably connected with said stake.

3. A device of the character described comprising a rail engaging member adapted

to be disposed between the base and tread flanges of a concrete form rail and so formed that its upper extremity bears upwardly and slidably against the tread flange and that its

5 lower extremity bears downwardly and slidably on the base flange, an anchor stake, a clamping member carried by the stake, and a brace bar pivoted to said member and slidably and pivotally engaging said clamping

10 member.
4. A device of the character described comprising a rail engaging member, a stake, a brace bar pivoted to said member, said stake and bar having slots, and a clamping

15 means extending through said slots.
5. A device of the character described comprising a rail engaging member, an anchor member, and a plurality of brace bars pivotally connected to said anchor member

20 and at spaced points to said rail engaging member and slidably connected to one of said members and adjustable angularly relatively to one another.
6. A device of the character described

25 comprising a rail engaging member, an anchor stake, and a pair of brace bars pivoted at spaced points to said member and having a slidable and pivotal connection with said stake and adjustable angularly relatively to

30 one another.
7. A device of the character described comprising a rail engaging member, a stake, clamping means carried by said stake, and a pair of brace bars pivoted at spaced points

35 to said member and slidably and pivotally engaging said clamping means and adjustable angularly relatively to one another.
8. A device of the character described comprising a rail engaging member, a stake

40 having a slot, clamping means extending through said slot, and a pair of brace bars pivoted to said member and having slots receiving said clamping means.
9. A device of the character described

45 comprising a rail engaging member, a stake, a pair of brace bars pivoted to said member and adapted to cross one another and said stake, and means for clamping said bars and stake together.
10. A device of the character described

50 comprising a rail engaging member, a stake, a pair of brace bars pivoted to said member to be arranged at different angles with reference to said member and stake, and means

55 for clamping said bars to the stake.
11. A device of the character described comprising a rail engaging member adapted to be disposed between the base and tread flanges of a concrete form rail and so formed

60 that its upper extremity bears upwardly and slidably against the tread flange and that its lower extremity bears downwardly and slidably on the base flange, a stake, and bracing

means for connecting said member and stake and arranged to assume different angular positions with reference to said member and stake.

12. A device of the character described comprising a rail engaging member adapted to be disposed between the base and tread 70 flanges of a concrete form rail and so formed that its upper extremity bears upwardly and slidably against the tread flange and that its lower extremity bears downwardly and slidably on the base flange, a stake, and bracing 75 means for connecting said member and stake and adjustable upwardly and downwardly with reference to said member.

13. A device of the character described comprising a rail engaging member adapted 80 to be disposed between the base and tread flanges of a concrete form rail, the upper extremity of said member being formed to bear upwardly and slidably against the tread flange, and having a slot to receive a second- 85 ary flange depending from said tread flange, the lower extremity of said member being formed to bear downwardly and slidably on the base flange and having a slot to receive a secondary flange upturned from said base 90 flange, and stake engaging means adjustably connected with said member.

14. A device of the character described comprising a rail engaging member adapted to be disposed between the base and tread 95 flanges of a concrete form rail and so formed that its upper extremity bears upwardly and slidably against the tread flange and that its lower extremity bears downwardly and slidably on the base flange, a stake, and bracing 100 means connecting and adjustable relatively to said member and stake and detachable therefrom.

15. A device of the character described comprising a rail engaging member, and a 105 stake engaging member, the rail engaging member having a slot to receive the stake engaging member and the stake engaging member having a portion to pivotally en- 110 gage in said slot for connecting said mem- bers.

16. A device of the character described comprising a rail engaging member adapted to be disposed between the base and tread 115 flanges of a concrete form rail and so formed that its upper extremity bears upwardly and slidably against the tread flange and that its lower extremity bears downwardly and slidably on the base flange, a stake, bracing 120 means pivotally connected with said member to be swung vertically and horizontally, and means for clamping said bracing means to the stake.

In testimony whereof I hereunto affix my signature.

JOHN N. HELTZEL.