March 3, 1959 G. D. STOUGH 2,875,500

ROAD FORM STRUCTURE

Filed Oct. 25, 1954

3 Sheets-Sheet 1

FIG.1.

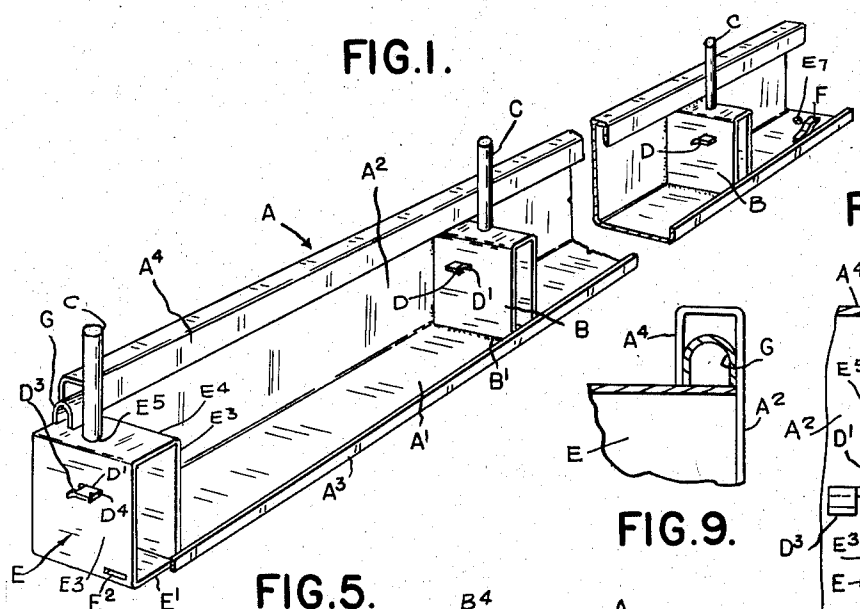


FIG.8.

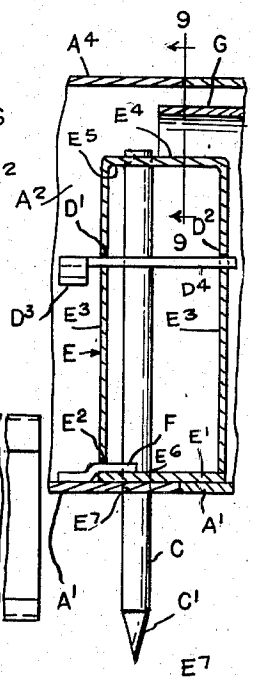


FIG.9.

FIG.5.

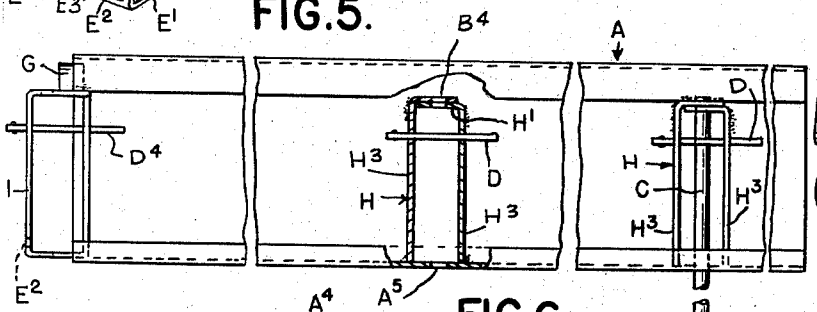


FIG.6.

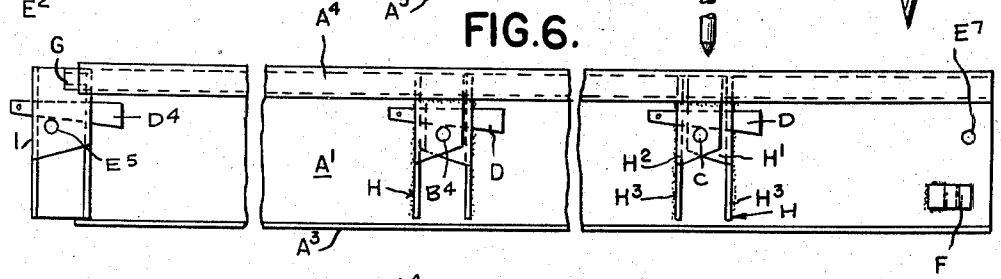
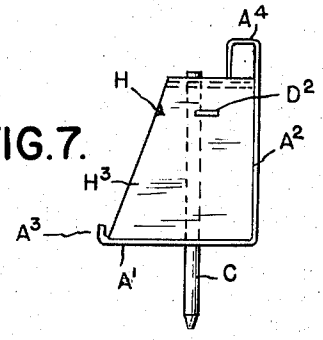


FIG.7.



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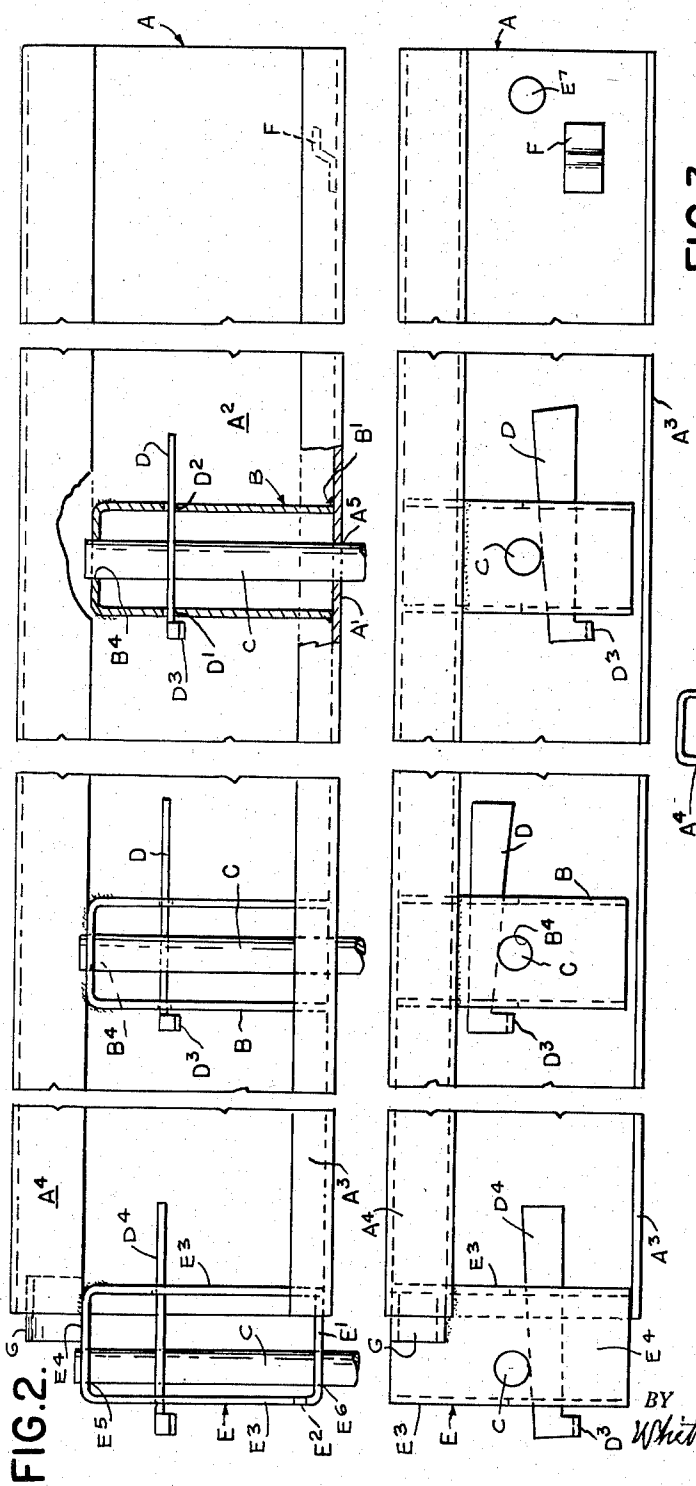


FIG. 2.

FIG. 3.

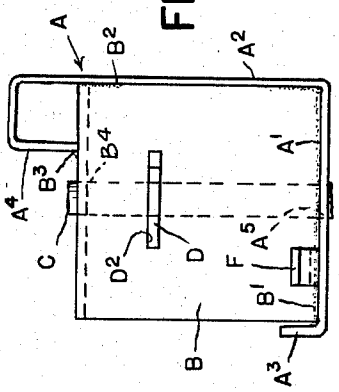


FIG. 4.

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FIG.11.

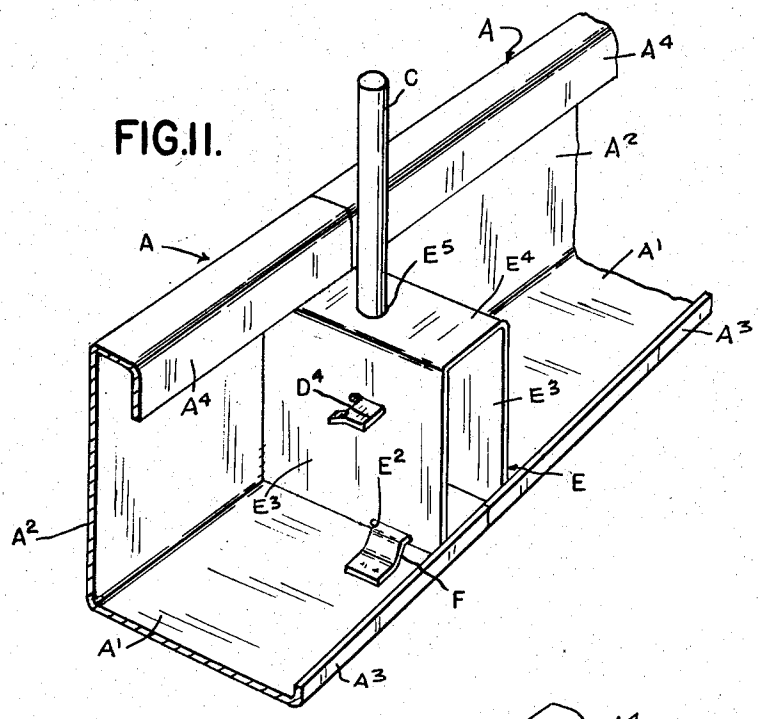
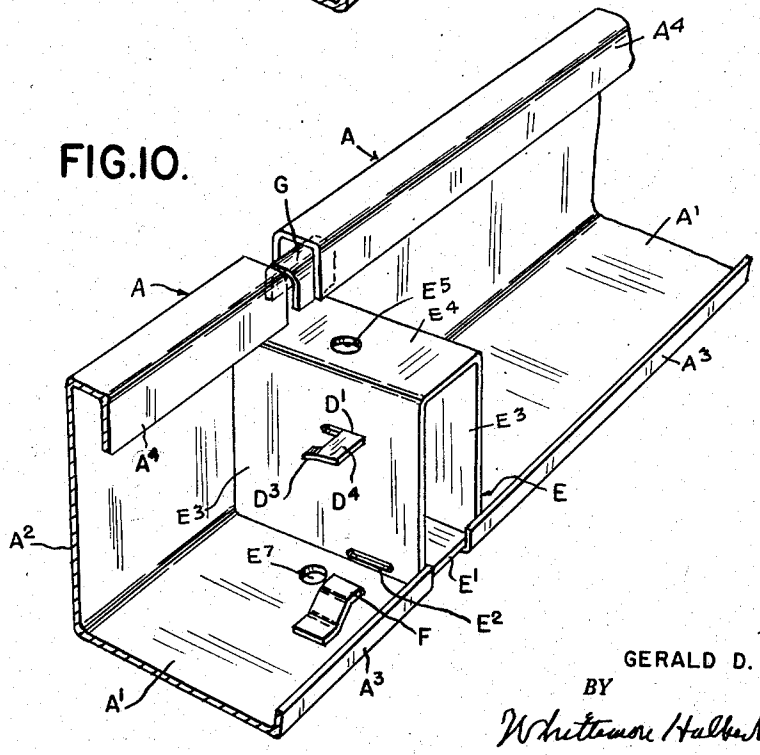


FIG.10.



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ROAD FORM STRUCTURE

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Application October 25, 1954, Serial No. 464,323

7 Claims. (Cl. 25—118)

The invention relates to road forms designed for use in the laying of pavements and comprising a series of sections which are successively positioned in alignment with each other in the roadway and anchored thereto. Such forms perform a double function, first, they constitute a mold which limits the width and governs the depth or thickness of the pavement, and second, these forms constitute rails or tracks for supporting the apparatus used for depositing and distributing the concrete or other plastic road material and for leveling the surface thereof.

It is the object of the invention to obtain a construction of road form having a number of advantageous features including, first, the means for securing accurate alignment of the forms in relation to each other; further, to reinforce the structure so as to hold it from deflection under load; further, to provide anchoring means which is easily applied and also easily removed when a section is to be shifted from one position to another.

With these objects in view the invention consists in such various features of construction as hereinafter more fully set forth.

In the accompanying drawings:

Fig. 1 is a perspective view of one of the sections of the road form positioned ready for anchoring in the roadway.

Fig. 2 is an elevation partly in longitudinal section.

Fig. 3 is a plan view.

Fig. 4 is an end elevation.

Figs. 5, 6 and 7 are views similar, respectively, to Figs. 2, 3 and 4 showing a modified construction.

Fig. 8 is an enlarged longitudinal section through the joint between two aligned sections.

Fig. 9 is a section on line 9—9, Fig. 8, showing the lateral aligning means between the sections.

Figs. 10 and 11 are perspective views showing the manner of engaging a new rail with the one previously anchored.

Each section of the road form comprises a pair of rails A positioned in the roadway on opposite sides of the pavement to be laid. Each of these rails A has in cross section a base portion A', an upwardly extending web portion A^2 at one edge of said base portion and disposed at right angles thereto, an upwardly extending reinforcing flange A^3 at the opposite edge of the base portion, and an inverted U-shaped or return-bent portion A^4 at the upper edge of the web portion and forming a track for supporting road forming apparatus. At longitudinally spaced pionts along the length of the rail are reinforcing hollow inverted U-shaped brace members B which as shown in Fig. 4 are welded at B' to the base portion A' and at B^2 to the web portion A^2 and pass beneath the inverted U-shaped portion A^4 to which they are also welded as at B^3. These brace members B serve to support the inverted U-shaped portion A^4 and to hold the web portion A^2 against lateral deflection. A further important function performed by the brace members B is in connection with the anchoring

means for the rail. Such anchoring means comprises a series of stakes C, each of which is driven through aligned vertical apertures B^4 and A^5, respectively in the top of the brace member B and the base portion A', and to a suitable depth in the road bed. To hold each rail A down by these anchoring stakes C, wedge members D extend horizontally through aligned slots D', D^2 in opposite sides of the brace members B and having binding engagement with said stake C at one side thereof. The small end of the wedge D is provided with a detent D^3 which prevents its accidental detachment from the brace member B.

For accurately aligning and holding the rails in aligned abutting relation with each other there is arranged at one end of the rail A an inverted U-shaped coupling member E projects beyond the end of the rail bers B but having also a horizontal bottom portion E' extending across the opening of the inverted U. A small portion of the bottom portion E' overlies and is welded to the base portion A' of the rail A. Other portions of the coupling member E are welded to the web portion A^2 and to the inverted U-shaped portion A^4 respectively of the rail A. The major portion of said couplnig member E projects beyond the end of the rail A to rest upon the base portion A' of an adjoining rail A in abutting relation with the base portion A' of the first mentioned rail A. Such coupling member E engages and forms a brace between the web portions A^2 and the flanges A^3 of said abutting rails. The top portion E^4 of said coupling member E engages the underside of and supports the inverted U-shaped portions of said abutting rails. Thus the coupling member E bridges the joint between the abutting rails A. To detachably hold the two abutting rails together and in accurate alignment, apertures E^5 and E^6 respectively are formed in the top and bottom portions E^4 and E' of the projecting portion of the coupling member E in vertical alignment with an aperture E^7 in the base portion A' of the adjoining rail for receiving one of said stakes C. This stake has a tapering end portion C' which will enter the apertures in the two rails even when not in exact registration so that in driving the stake it will operate as a cam for drawing the rails together and into exact alignment. A wedge member D^4 similar to the wedge members D extends through horizontally aligned slots in the opposite vertical side portions E^3 of the coupling member E for clamping the same to the stake C as previously described. A further aligning member for the track portions of the two rails is formed by a dowel member G which, as shown in Fig. 9, is of inverted U-cross section fitting within the inverted U-shaped portion A^4. The dowel member G is welded to the inverted U-shaped portion A^4 at the end of the rail having the member E and projects outwardly from said inverted U-shaped portion A^4 to engage the corresponding inverted U-shaped portion A^4 of the adjoining rail so as to hold such portions in exact alignment.

The construction illustrated in Figs. 5 to 7, inclusive, are similar to that already described in Figs. 2 to 4 with the exception that the members B and E are slightly modified. The inverted U-shaped brace member H which corresponds to B is formed of two angle sections having overlapping top flanges H' and H^2. The vertical side portions H^3 of these angle sections are at their lower edges the full width of the base portion A' of the rail but taper upwardly and inwardly toward the top flanges H' and H^2 which are also reduced in width. Such top flanges H' and H^2 are, however, of sufficient width to include the stake aperture. The coupling member I corresponding to the coupling member E is also similarly modified, being wide at the base portion A' of the rail and tapering upwardly

and inwardly toward the inverted U-shaped portion A^4 of the rail. The advantage of this construction over that previously described is that it affords access to and facilitates removal of the stakes C when the rails are to be shifted from one position to another. Thus, a suitable tool provided with means for clamping engagement with portions of the stakes within the members H and I may be more readily inserted within the open ends of these tapering members H and I and used as a lever for prying up the stakes.

From the description already given the operation of laying the forms will be understood. Whenever a new rail A of the form is to be positioned, an end of such new rail is abutted against the end of the anchored rail A and will be accurately aligned therewith as previously described. If there is any resistance to such positioning, as for instance by cement adhering to the adjacent portions of one or both of the rails, the driving of the stakes as above described will overcome this resistance and bring the rails in the proper relation to each other.

One very important advantage of the construction is that locating a stake at the joint between adjacent rails causes the cantilever end portion of each rail to be held securely. In other words, if the road bed beneath the joint is not sufficiently rigid to hold the rails from depression therein, the stake will perform this function.

Figs. 10 and 11 illustrate the placing of a new rail A in alignment with a previously anchored rail A. In Fig. 10 the new rail is shown in a position to be engaged with the anchored rail, and Fig. 11 shows the assembled rails in full engagement, with the stake C in position for driving. If, however, the position of Fig. 11 is not attained prior to the driving of the stake, it will be after such driving as above explained. It will be noted that in Fig. 10 the upwardly offset free end of tongue F is in alignment but not engaged with the slot E^2 because the two adjacent rails A have not been fully assembled, while in Fig. 11 the free end of the tongue F has been inserted in and is in full engagement with the slot E^2 to hold the base portions A' of the two rails A in horizontal alignment after said rails have been fully assembled. The dowel G is also shown in Fig. 10 prior to its engagement with the inverted U-shaped portion A^4 of the adjacent rail. Such dowel G of one rail A fits within the inverted U-shaped portion A^4 of the other adjacent rail A when the two rails A are fully assembled.

What I claim as my invention is:

1. A road form structure comprising two aligned abutting rails adapted to be supported upon a road bed, each of said rails having a horizontal base portion provided at opposite edges respectively with an upwardly extending web portion and an upwardly extending reinforcing flange, an inverted U-shaped portion at the upper edge of each web portion and forming a track for supporting road forming apparatus, and means detachably holding said rails in aligned abutting relation, including an inverted U-shaped coupling member bridging the joint between said abutting rails and engaging the web portions and reinforcing flanges of said abutting rails, said coupling member having a bottom portion extending across the opening of the inverted U and resting upon the base portions of said abutting rails, the top portion of said coupling member engaging the underside of and supporting the inverted U-shaped portions of said abutting rails, said bottom portion being rigidly secured to the base portion of one of said rails, the base portion of the other of said rails having an aperture, the top and bottom portions of said coupling member having aligned apertures in alignment with the apertures aforesaid, a single stake engaging the three aligned apertures for anchoring said abutting rails to said road bed and holding said rails against endwise displacement, opposite side portions of said inverted U-shaped coupling member having aligned slots, a wedge engaging said aligned slots and having binding engagement with said stake at one side thereof, and a tongue rigidly secured to the base portion of the other of said rails aforesaid and having a free end engaging a slot in the adjacent side portion of said inverted U-shaped coupling member to hold the base portions of said abutting rails in horizontal alignment.

2. A road forming structure comprising two aligned abutting rails adapted to be supported upon a road bed, each of said rails having a horizontal base portion provided at opposite edges respectively with an upwardly extending web portion and an upwardly extending reinforcing flange, and means detachably holding said rails in aligned abutting relation, including an inverted U-shaped coupling member bridging the joint between said abutting rails and engaging the web portions and reinforcing flanges of said abutting rails, said coupling member having a bottom portion extending across the opening of the inverted U and resting upon the base portions of said abutting rails, said bottom portion being rigidly secured to the base portion of one of said rails, the base portion of the other of said rails having an aperture, the top and bottom portions of said coupling member having aligned apertures in alignment with the aperture aforesaid, a single stake engaging the three aligned apertures for anchoring said abutting rails to said road bed and holding said rails against endwise displacement, opposite side portions of said inverted U-shaped coupling member having aligned slots, a wedge engaging said aligned slots and having binding engagement with said stake at one side thereof, and a tongue rigidly secured to the base portion of the other of said rails aforesaid and having a free end engaging a slot in the adjacent side portion of said inverted U-shaped coupling member to hold the base portions of said abutting rails in horizontal alignment.

3. A road form structure comprising two aligned abutting rails adapted to be supported upon a road bed, each of said rails having a horizontal base portion provided at opposite edges respectively with an upwardly extending web portion and an upwardly extending reinforcing flange, an inverted U-shaped portion at the upper edge of each web portion and forming a track for supporting road forming apparatus, and means detachably holding said rails in aligned abutting relation, including an inverted U-shaped coupling member bridging the joint between said abutting rails and engaging the web portions and reinforcing flanges of said abutting rails, said coupling member having a bottom portion extending across the opening of the inverted U and resting upon the base portions of said abutting rails, the top portion of said coupling member engaging the underside of and supporting the inverted U-shaped portions of said abutting rails, said bottom portion being rigidly secured to the base portion of one of said rails, the base portion of the other of said rails having an aperture, the top and bottom portions of said coupling member having aligned apertures in alignment with the aperture aforesaid, a single stake engaging the three aligned apertures for anchoring said abutting rails to said road bed and holding said rails against endwise displacement, and a tongue rigidly secured to the base portion of the other of said rails aforesaid and having a free end engaging a slot in the adjacent side portion of said inverted U-shaped coupling member to hold the base portions of said abutting rails in horizontal alignment.

4. A road form structure comprising two aligned abutting rails adapted to be supported upon a road bed, each of said rails having a horizontal base portion provided at opposite edges respectively with an upwardly extending web portion and an upwardly extending reinforcing flange, and means detachably holding said rails in aligned abutting relation, including an inverted U-shaped coupling member bridging the joint between said abutting rails and engaging the web portions and reinforcing flanges of said abutting rails, said coupling member having a bottom

portion extending across the opening of the inverted U and resting upon the base portions of said abutting rails, said bottom portion being rigidly secured to the base portion of one of said rails, the base portion of said other of said rails having an aperture, the top and bottom portions of said coupling member having aligned apertures in alignment with the aperture aforesaid, a single stake engaging the three aligned apertures for anchoring said abutting rails to said road bed and holding said rails against endwise displacement, and a tongue rigidly secured to the base portion of the other of said rails aforesaid and having a free end engaging a slot in the adjacent side portion of said inverted U-shaped coupling member to hold the base portions of said abutting rails in horizontal alignment.

5. A road form structure comprising two aligned abutting rails adapted to be supported upon a road bed, each of said rails having a horizontal base portion provided with an upwardly extending web portion and an inverted U-shaped portion at the upper edge of said web portion forming a track for supporting road forming apparatus, and means detachably holding said rails in aligned abutting relation, including an inverted U-shaped coupling member bridging the joint between said abutting rails and engaging the web portions of said abutting rails, said coupling member having a bottom portion extending across the opening of the inverted U and resting upon the base portions of said abutting rails, the top portion of said coupling member engaging the underside of and supporting the inverted U-shaped portions of said abutting rails, said bottom portion being rigidly secured to the base portion of one of said rails, the base portion of the other of said rails having an aperture, the top and bottom portions of said coupling member having aligned apertures in alignment with the aperture aforesaid, a single stake engaging the three aligned apertures for anchoring said abutting rails to said road bed and holding said rails against endwise displacement, and a tongue rigidly secured to the base portion of the other of said rails aforesaid and having a free end engaging a slot in the adjacent side portion of said inverted U-shaped coupling member to hold the base portions of said abutting rails in horizontal alignment.

6. A road form structure comprising two aligned abutting rails adapted to be supported upon a road bed, each of said rails having a horizontal base portion provided with an upwardly extending web portion and an inverted U-shaped portion at the upper edge of said web portion forming a track for supporting road forming apparatus, and means detachably holding said rails in aligned abutting relation, including an inverted U-shaped coupling member bridging the joint between said abutting rails and engaging the web portions of said abutting rails, said coupling member having a bottom portion extending across the opening of the inverted U and resting upon the base portions of said abuttting rails, the top portion of said

coupling member engaging the underside of and supporting the inverted U-shaped portions of said abutting rails, said bottom portion being rigidly secured to the base portion of one of said rails, the base portion of the other of said rails having an aperture, the top and bottom portions of said coupling member having aligned apertures in alignment with the aperture aforesaid, a single stake engaging the three aligned apertures for anchoring said abutting rails to said road bed and holding said rails against endwise displacement, said coupling member tapering upwardly and inwardly toward said inverted U-shaped portion to afford access to the stake to facilitate the removal thereof, and a tongue rigidly secured to the base portion of the other of said rails aforesaid and having a free end engaging a slot in the adjacent side portion of said inverted U-shaped coupling member to hold the base portions of said abutting rails in horizontal alignment.

7. A road form structure comprising two aligned abutting rails adapted to be supported upon a road bed, each of said rails having a horizontal base portion provided with an upwardly extending web portion, and means detachably holding said rails in aligned abutting relation, including an inverted U-shaped coupling member bridging the joint between said abutting rails and engaging the web portions of said abutting rails, said coupling member having a bottom portion extending across the top of the inverted U and resting upon the base portions of said abutting rails, the said bottom portion being rigidly secured to the base portion of one of said rails, the base portion of the other of said rails having an aperture, the top and bottom portions of said coupling member having aligned apertures in alignment with the aperture aforesaid, a single stake engaging the three aligned apertures for anchoring said abutting rails to said road bed and holding said rails against endwise displacement, and a tongue rigidly secured to the base portion of the other of said rails aforesaid and having a free end engaging a slot in the adjacent side portion of said inverted U-shaped coupling member to hold the base portions of said abutting rails in horizontal alignment.

References Cited in the file of this patent

UNITED STATES PATENTS

640,377	Haentges	Jan. 2, 1900
1,449,626	Pulis	May 27, 1923
1,548,038	Hotchkiss	Aug. 4, 1925
1,560,516	Trester	Nov. 3, 1925
1,682,008	Heltzel	Aug. 28, 1928
1,911,146	Diehl	May 23, 1933
1,944,257	Miller	Jan. 23, 1934
2,180,842	Winding	Nov. 21, 1939

FOREIGN PATENTS

395,442	Great Britain	July 20, 1933