April 29, 1924. 1,492,325

M. S. HOTCHKISS

ROAD RAIL FOR CONCRETE PAVEMENTS AND ANALOGOUS USES

Filed April 26, 1921

Fig. 1.

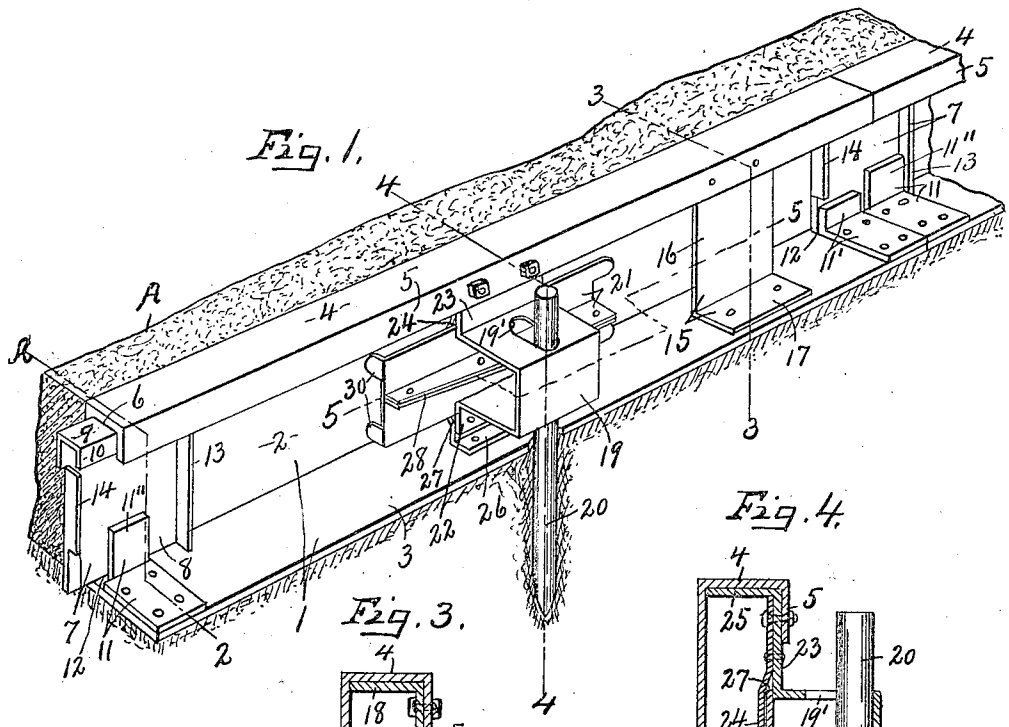


Fig. 3.

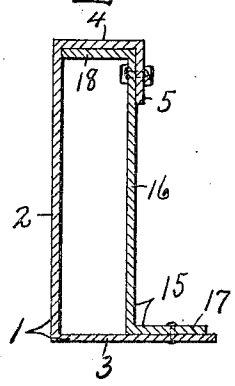


Fig. 4.

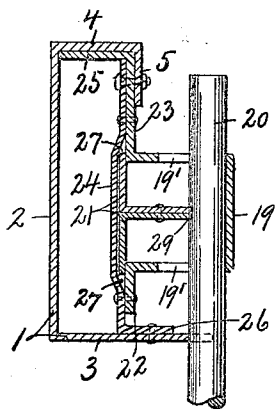


Fig. 2.

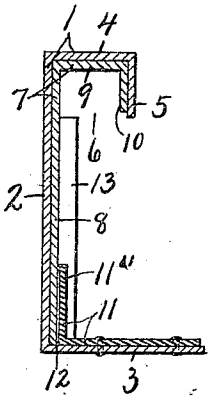
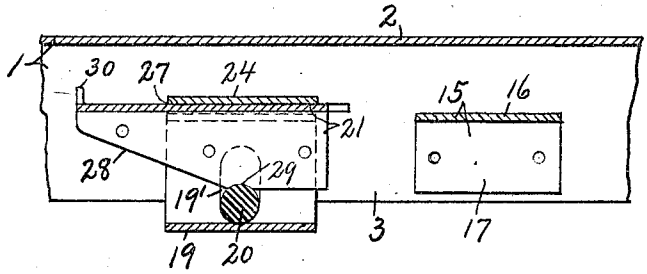


Fig. 5.



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UNITED STATES PATENT OFFICE.

MARK S. HOTCHKISS, OF BINGHAMTON, NEW YORK.

ROAD RAIL FOR CONCRETE PAVEMENTS AND ANALOGOUS USES.

Application filed April 26, 1921. Serial No. 464,631.

To all whom it may concern:

Be it known that I, MARK S. HOTCHKISS, of Binghamton, in the county of Broome, in the State of New York, have invented new and useful Improvements in Road Rails for Concrete Pavements and Analogous Uses, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

This invention relates to certain improvements in marginal forms commonly known as "road-rails" for defining the contour and grade of the marginal edges of concrete pavements and analogous work during the process of construction.

These road rails are necessarily made in sections preferably of sheet steel rolled or pressed to the desired form and arranged end to end along the edges of the proposed pavement for imparting the desired regularity of finish and also for establishing the desired grade of the upper surfaces of said edges, while the pavement is under construction, it being understood that the upper surface of the adjacent portions of the pavement are finished substantially flush with the top faces of the road-rails along and upon which the surfacing machines are adapted to ride, and the main object of my present invention is to provide a light, strong and durable road-rail which may be easily and quickly installed in proper alinement along the edges of the road-bed and which will maintain its longitudinal and vertical alinement under the various strains to which it may be subjected during the construction and finishing of the pavement.

Another object is to assemble the several sections in such manner that they may be easily and quickly removed for reuse when the road-bed or pavement is finished or sufficiently set to be self-supporting.

Other objects and uses relating to specific parts of the device will be brought out in the following description:

In the drawings:

Fig. 1 is a perspective view of a portion of one of the road-rails embodying the various features of my invention showing also a portion of the finished pavement adjacent thereto.

Figs. 2, 3 and 4 are transverse vertical sectional views taken respectively, on lines 2—2, 3—3 and 4—4, Fig. 1.

Fig. 5 is a horizontal sectional view taken on line 5—5, Fig. 1.

The various parts of the road-rail, except the stake, are preferably made of sheet steel and comprise a series of main lengthwise sections —1— of substantially the same cross sectional form and held end to end in longitudinal and horizontal alinement by suitable coupling plates to form a substantially continuous road-rail of any suitable length, each of the main sections being substantially L-shaped in cross-section and consisting of a flat upright portion —2—, a base flange —3— and a top flange —4— overhanging the base flange —3— and provided with a pendant lengthwise flange —5— of sufficient vertical height to form an intervening channel —6—.

That is, the base and top flanges —3— and —4— are substantially parallel and spaced some distances apart vertically while the pendant flange —5— is parallel with the main upright portion —2— and spaced therefrom to form the channel —6— previously mentioned, the vertical depth of the pendant flange —5— being relatively narrow as compared with the vertical height of the rail as a whole, thereby leaving a considerable space between the lower edge of the pendant flange and base flange —3— for the reception of various attachments hereinafter described.

The base flanges —3— are substantially flat and are adapted to rest directly upon the surface of the ground with the upright portions —2— facing inwardly to form abutting forms for the adjacent edge of the pavement as —A—, it being understood that these rails are arranged along both sides of the road-bed in parallelism to form the opposite edges thereof so that their upper faces may conform to an established grade to which the surface of the pavement is to be laid.

It, therefore, becomes important to furnish means for firmly locking and holding the adjacent ends of the rail-sections against relatively vertical or lateral movement, and for this purpose is provided locking plates —7—, one for each joint, each locking plate consisting of a substantially flat upright main body —8—, out-turned top flange —9— and a pendant flange —10— extending downwardly from the outer edge of the top flange —9— and together with said top

flange forming an integral part of the coupling plate —7—, the vertical width of the main portion —8— being substantially equal to the distance between the base flange —3— and top flange —4— of the rail-section —1—, while the horizontal width of the top flange —9— is approximately equal to the distance between the main body —2— and pendant flange —5— of the same section, the flange —10— being of slightly less vertical width than that of the flange —5—.

In other words, the coupling section —7— is adapted to slide lengthwise of and within the adjacent ends of the rail section —1— with the main body —8— in close juxtaposition to the inner face of the main upright body —2—, and therefore the upper portion of the coupling section —7— is held in place against lateral displacement between the main body —2— and flange —5— of the rail-section —1—.

Angular guide brackets —11— and —11′— are permanently secured by rivets or other suitable fastening means to the upper faces of the adjacent ends of the base flange —3— and are provided with up-standing flanges —11″— spaced apart from the upright walls —2— a distance corresponding to the thickness of the upright portions —8— of the coupling member —7— to hold the lower portion of said coupling plate against lateral movement relatively to the rail-section —1— and also to form a guide groove —12— in which the lower edge of the coupling plate is slidable.

The flanges —3—, —4— and —5— of the rail-section —1— not only function as ground supports for holding the rail in an upright position and for retaining and guiding the coupling member —7—, but also add greatly to the strength of the rail-section and permit the use of comparatively light sheet metal which renders the sections easily portable and enables them to be easily and quickly installed in place for defining the marginal edges of the concrete pavement and permits them to be expeditiously removed or stripped from the concrete when the latter is set or the pavement finished, and reused in the construction of other parts of the same pavement or other pavements.

The flanges —9— and —10— of the coupling member —7— also serve to stiffen said coupling member against buckling and to additionally support the top flange —4— of the rail-section —1— to resist the weight of the surfacing machine in traveling along the rail during the surface finishing of the road-bed, although the main function of said coupling plate is to support the meeting ends of the rail-sections against relatively vertical or lateral movement under the strains to which the rails are subjected.

The opposite end edges of each of the coupling plates —7— are provided with out-turned flanges —13— and —14— for reinforcing purposes and also to provide means whereby the plates may be moved endwise to and from a position across the joints between the rail-sections, said flanges also constituting stops for engaging opposite upright edges of the flange —11″— and thereby preventing endwise displacement of the coupling member from the rail-section to which the angle plate —11— is secured.

The distance between the flanges —13— and —14— is sufficient to allow the coupling plate —7— to be adjusted endwise, substantially one-half its length beyond the end face of the rail-section upon which it is mounted for over-lapping inter-locking engagement with the end of the next adjacent rail section or it may be adjusted in a reverse direction a sufficient distance to withdraw it entirely from said adjacent rail-section or within the end face of the rail-section in which it is movable.

In order that the coupling member —7— may be adjusted to over-lap upon the adjacent ends of both rail-sections, the lower portion of the flange —14— is cut away, while the up-standing flange of the angle-plate —11′— is preferably of less vertical height than the up-standing part of the angle-plate —11— which permits the flange —14— to move across the upper edge of the up-standing flange of part —11′— as shown at the right-hand of Figure 1.

The intermediate portions of the base flange —3— and top flange —4— of each rail-section may be additionally braced against relative movement by one or more brace plates —15—, Figures 1 and 3, each brace plate consisting of a substantially flat upright —16— and oppositely projecting horizontal flanges —17— and —18—, the main body —16— being of substantially the same vertical height as the distance between the base flange —3— and top flange —4—, while the flange —18— is of substantially the same width as the distance between the main body —2— and flange —5— to lie flatwise against the underside of the top flange —4—, the bottom flange —17— lying flatwise against the upper face of the base flange —3— and is secured thereto by rivets or other suitable fastening means.

The upright portion —16— of the brace plate —15— is spaced apart from the upright portion —2— of the rail-section in parallelism therewith and is secured by bolts or other suitable fastening means to the inner face of the flange —5—, thereby forming a permanent part of the rail to support the top flange —5— against depression by the weight of the surfacing machine which may ride thereon in finishing the surface of the pavement.

Suitable means is provided for holding the rails against lateral or lengthwise displacement upon the surface of the ground, and for this purpose each of the rail-sections are provided with one or more substantially U-shaped brackets —19— having transversely elongated vertical alined openings —19′— for receiving a stake —20— which is passed through said openings and driven into the ground a sufficient distance to firmly hold it in place against lateral movement and to which the bracket is locked by a wedge-shaped locking member —21—.

The U-shaped bracket —19— is disposed in an upright position with its opposite arms in which the stake openings —19′— are formed, disposed in substantially parallel horizontal planes, the inner ends of said arms being provided with oppositely turned flanges —22— and —23— which are permanently secured by rivets or other suitable fastening means to an inner guide plate —24—, the upper flange —23— being provided with an inwardly offset flange —25— resting flat-wise against the inner face of the top flange —4— of the rail-section —1—, while the lower edge of the guide plate —24— is provided with an out-turned flange —26— secured by suitable bolts or rivets to the base flange —3— of said rail-section.

The intermediate portion of the guide plate —24— is spaced a short distance from the adjacent portions of the flanges —22— and —23— of the stake bracket —19— to form an intervening guide way —27— in which the locking-member —21— is movable.

This locking-member —21— preferably consists of two angle plates having two of heir flanges secured flat-wise to each other to form a substantially horizontal flange, the outer edge of which is tapered at —28—, thereby forming a wedge-shaped member which engages the inner face of the stake —20—, the remaining flanges of the locking member —21— being projected in opposite directions in substantially the same vertical plane for engagement in the lower and upper guideways —27—.

The wedge-shaped key or locking member —21— is provided with a recess —29— in its outer edge at the highest point of the cam-face —28— to form a seat for the stake —20— when the wedge is driven tightly in place. The end of the key or locking member —21— nearest the low point of the cam-face —28— is provided with in-turned stop shoulders —30— for engagement with the adjacent edge of the guide plate —24— to prevent displacement of the key from its guideways —27— and at the same time to allow sufficient movement of the key for the complete release or retightening of the stake.

In installing this road-rail, the various sections are placed end to end along the marginal edges of the road-bed and properly alined and set to grade, after which the stakes —20— are driven through the openings —19— in the brackets —18— and sufficiently deep into the ground to make a firm anchorage for the rail-section, after which the keys —21— are adjusted to tighten the rail to the stake.

As soon as the rail-sections are properly alined with each other, the coupling plates —7— are adjusted to lock the adjacent ends of the several plates to each other against relative lateral or vertical movement, whereupon the rails will be properly set for receiving the concrete between them, it being understood that by the reverse operation of a locking plate —7— and keys —28—, the rail-sections may be removed or stripped from the concrete —1— one by one or in combinations if desired.

What I claim is:

A form for concrete pavement comprising a rail-section, a bracket secured to said rail-section and provided with a vertical opening elongated transversely, a stake passed through said opening and adapted to be driven into the ground, a wedge-shaped locking key movable in the bracket transversely of and against the inner face of the stake for holding the stake and rail-section against relatively lateral movement, said locking member having a recess at the higher point of its wedge-face for registering with the stake to hold the locking member against accidental displacement from its locking position.

In witness whereof I have hereunto set my hand this 19th day of April, 1921.

MARK S. HOTCHKISS.

Witnesses:
HARRY A. ZETTER,
HENRY G. HARDEN.