Oct. 19, 1937. E. L. SHAW 2,096,699

BUILDING CONCRETE ROADWAYS

Filed Dec. 1, 1934

Fig. 1.

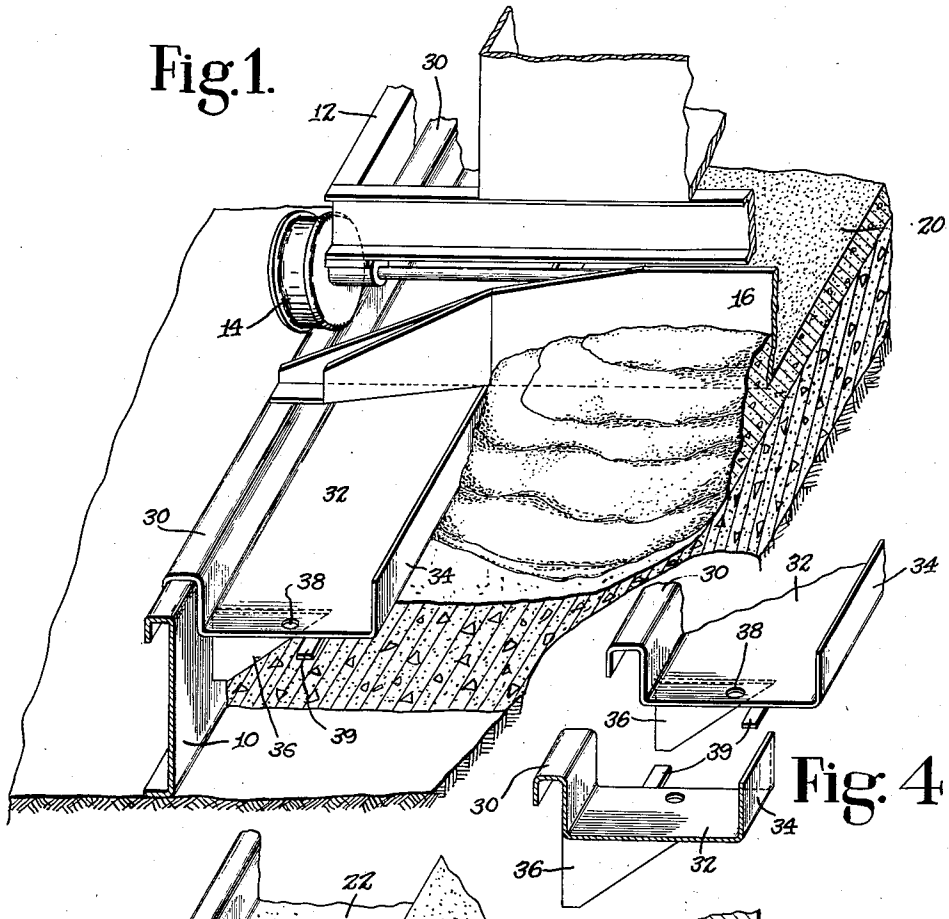


Fig. 4

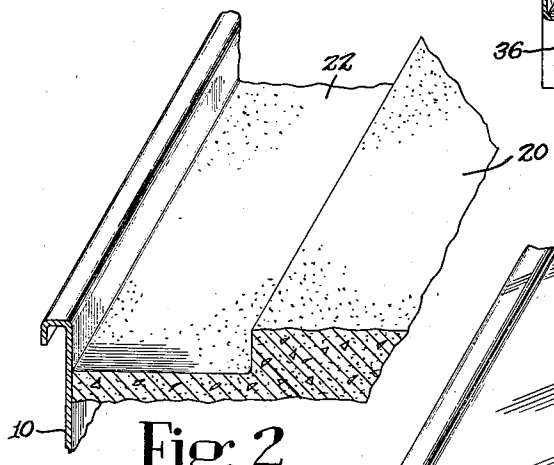


Fig. 2.

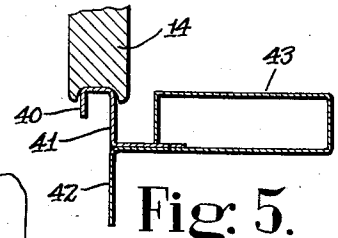


Fig. 5.

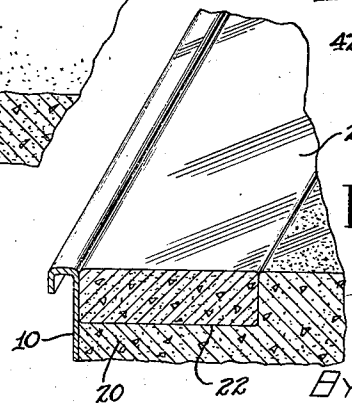


Fig. 3.

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BUILDING CONCRETE ROADWAYS

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9 Claims. (Cl. 94—45)

This invention relates to the building of concrete roads and consists in an improved method of laying distinctive stripes therein such, for example, as a white strip marking lanes of traffic in roadways of dark or tinted concrete. The invention includes within its scope a novel marker form herein shown as used in carrying out the method of my invention.

In laying concrete roadway with the assistance of modern machinery, it is the practice to define the edge of the concrete body by metallic rails which not only act as a form and provide the outer wall of the mold for the concrete slabs making the roadway but also serve as a track for the concrete delivering and smoothing machinery. In laying a white traffic marker strip, the present practice is either to construct separate narrow molds along the edge of the tinted slab and pour the white concrete as a separate operation, or to employ temporary marker forms, such as planks, located just within the side rail, which may be removed when the main body of the concrete is partially or completely set, leaving elongated channels cast therein for the reception of the white concrete. The first of these methods is satisfactory structurally but adds objectionably to the cost of the roadway. The second method has not been satisfactory on account of the difficulty of securing wooden forms in position and by reason of their tendency to absorb moisture from the concrete, to warp and to become misplaced in use.

The object of the present invention is to provide a relatively inexpensive method of laying white traffic marker strips characterized by the use of marker forms not subject to the objections above set forth. In a broad aspect, my invention consists in securing an elongated metallic marker form to the side rail in such manner that it will be positively located against displacement and will not interfere in any way with the functions of the rail either as a track for the road making machinery or as a wall for the mold.

One satisfactory manner of carrying out my invention is characterized by the use of an elongated metallic marker form including an attaching portion, such as an inverted channel, adapted to hook over the upper surface of the rail and making such continuous engagement therewith as to serve as a track surface for the wheels of the road making machinery. The marker form has also a channel-shaped mold portion which is so disposed with reference to the attaching portion as to afford clearance for the flanges of the wheels. Such marker forms may be made up of sheet steel in sections of convenient length and positioned upon the side rail in continuous fashion, butting end to end. When thus positioned, the mold portion is positively and accurately held adjacent to the inner face of the rail without danger of displacement.

The marker forms may be located after the main portion of the concrete body of the roadway has been poured in such a manner that the forms act as a pattern for a channel-shaped mold extending continuously in the upper part of the concrete, or the previously poured concrete may be raked out to receive the marker forms. Then, after partial setting of the concrete, the marker forms are removed by lifting them vertically from the rail so that a continuous channel of sharp outline and accurate dimension is left adjacent to the inside of the rail in readiness to receive white concrete or concrete of a contrasting color. The metallic marker forms, when removed from the side rail, may be used over and over again as work upon the roadway progresses.

The marker form which I prefer to use is of sheet metal construction having an attaching portion in the shape of an inverted channel arranged to fit over the top of the rail and merging into a continuous open channel portion of the width desired in the marker strip. This may be supported, if desired, by one or more brace members arranged to engage the inner face of the rail. When a series of marker forms are assembled upon the rail they constitute a combined rail and mold wall upon which the wheels of the road making machinery may run without obstruction. If desired, the marker form sections may be provided at their ends with connecting means so that correct alignment thereof is insured in the assembled structure.

These and other features of the invention will be best understood and appreciated from the following description of a preferred embodiment thereof, selected for purposes of illustration and shown in the accompanying drawing, in which

Fig. 1 is a view in perspective showing a portion of the side rail in position at the edge of a roadway and carrying the marker form of my invention, together with a portion of the concrete spreading machine;

Fig. 2 is a fragmentary view in perspective showing the channel formed by the marker forms in the concrete body of the roadway;

Fig. 3 is a fragmentary view in perspective showing a portion of the completed roadway containing a white stripe;

Fig. 4 is a fragmentary view in perspective

showing the end portions of two marker forms; and

Fig. 5 is a sectional view showing a marker form of modified construction.

The rail 10 which is used as one wall of the mold in which the body of the roadway is cast is temporarily secured in position by means not herein shown. A portion of a concrete distributing and surfacing machine 12 is shown in Fig. 1 and this machine is provided with flanged wheels 14, one of which is shown in the drawing. In addition to mechanism for distributing the soft mixed concrete to the portion of the roadway bounded by the rail 10, the machine 12 is equipped with a horizontally oscillating bar or screed 16 which levels off and smooths the surface of the soft concrete, as suggested in Fig. 1. A portion of the concrete body 20 already surfaced by the oscillation of the screed 16 is shown in this figure. In Fig. 2 the concrete body 20 is shown as provided with a longitudinal channel or mold 22 adjacent to the rail 10 which has been molded therein by the employment of marker forms, such as those shown in Figs. 1 and 4 or Fig. 5.

The marker form of my invention is an elongated sheet metal member rolled or otherwise shaped in the form desired. As shown in Figs. 1 and 4, it includes at one edge an inverted channel 30 of the proper dimensions to hook over the flange of the rail 10. The inverted channel 30 merges into an open channel 32 bounded at its inner edge by a vertical wall 34 spaced from and parallel to the inverted channel 30 and being of slightly less height. In other words, the upper edge of the vertical wall 34 is disposed slightly below the crest of the channel 30 so as to afford a slight clearance with respect to a leveling bar or screed gauged from the convex upper surface of the channel 30. The marker forms may conveniently be four or five feet in length, or whatever length may prove convenient for manipulation in the field.

Each marker form is provided with one or more braces 36 which, as herein shown, comprise triangular plates of sheet metal welded in edgewise relation to the bottom of the open channel 32 and so arranged that when the marker form is in position upon the rail 10 the vertical edge of the brace bears thereagainst and supports the marker with the bottom of the open channel 32 in horizontal position. Each marker form, moreover, is preferably provided with one or more holes 38 into which a hook may be inserted, if desired, in the operation of removing the marker forms from their position in the concrete of the roadway. The forms are, moreover, provided at each end with offset tongues or projections 39 arranged in offset relation with respect to each other and in such position as to interlock with the bottom of the channel 32 and thus align the butting ends of adjacent forms as assembled upon the rail 10.

In Fig. 5 is illustrated a marker form of alternative construction comprising an angle member 41 having an inverted channel 40. The angle member 41 is secured by spot welding or otherwise to a sheet metal member having a downwardly extending leg 42, a horizontal portion adapted to underlie the horizontal flange of the member 41, and a portion of box section 43. The inner wall of the box section 43 is spaced from the vertical wall of the angle member 41 sufficiently to clear the flange of the wheel 14 of the concrete machine and the upper surface of the box section portion 43 is spaced slightly below the crest of the channel 40 so as to afford clearance for a screed gauged upon the upper convex surface of the channel 40.

In carrying out the method of my invention with the assistance of the marker form shown in Figs. 1 and 4, a series of marker forms is first assembled in end to end relation upon the side rail 10, the position of the forms being gauged by the braces 36 and their ends held in alignment by the tongues 39, as already explained. As thus assembled, the inverted channel portions 30 of the marker forms fit snugly upon the flange of the rail 10 and collectively form an accurate guiding surface for the wheels of the concrete machine, which may thus run upon the assembled rail and marker forms without any change of construction or practice from that usually followed. The soft mixed concrete is thereupon delivered to the roadway and distributed and smoothed by the oscillatory screed 16 as the concrete machine slowly rolls along the composite rail, it being apparent that the weight of the machine holds the forms down progressively as the machine travels thereonto and thereover. The marker forms may be depressed into the concrete body or the previously poured concrete may be raked out to receive the forms, completely surrounding them and their braces 36. In some cases it is the practice to pour and level the main portion of the roadway in one operation and then supply the remaining three or four inches from a richer mixture as a separate operation. Under these conditions, the concrete may be shaped about previously positioned marker forms. In either case, the surface of the concrete body thus poured is leveled substantially flush with the edge of the wall 34 of the open channel 32 of the marker form.

Having distributed and surfaced the concrete body in the manner explained, the latter is allowed to take its initial set for at least two hours and then the series of marker forms is removed, beginning at one end and extending one after another through the series. In this operation any loose concrete which has fallen into the open channel 32 is removed with the marker forms and a clean cut channel mold 22 is left in the surface of the concrete body 20 adjacent to the rail 10. In the removal of the individual marker molds, the braces 36 leave corresponding deep narrow recesses in the concrete body of the roadway. Having thus removed the marker forms, the molded channel 22 may be filled with white concrete or concrete of any contrasting color in any desired manner and the concrete so delivered may be surfaced flush with the surface of the concrete body 20, it being apparent that this surfacing operation is conveniently performed by the machine shown in Fig. 1 wherein the screed 16 extends over the channel 22 formed by the channel member 32. A strip of such white concrete 24 is shown in Fig. 3.

It will be apparent that the marker form shown in Fig. 5 may be used in precisely the same manner as above explained. In both cases the inverted channel fits closely upon the rail 10 and cooperates therewith to form a composite guide rail for the concrete machine, and in both cases the mold forming part of the marker is disposed with slight clearance below the crest of the attaching channel.

It will be understood that the depth and width of channel in marker form may be varied to suit the requirements of job.

Having thus described my invention, what I

claim as new and desire to secure by Letters Patent is:

1. Method of building concrete roadways wherein a metal rail is used to define one edge of a mold, characterized by the steps of securing an elongated metal marker form to the rail within the mold, pouring concrete within the mold while maintaining said form in position relative to the rail whereby casting a channel adjacent to the rail in the concrete body of the roadway, and subsequently filling said channel with white concrete.

2. Method of building concrete roadways wherein a metal rail is used to define one edge of a mold, characterized by the steps of securing a marker form continuously to the inner edge of the rail within the mold, pouring concrete about the form within the mold whereby forming a channel adjacent to the rail in the concrete body of the roadway, then removing the marker form and filling said channel with white concrete.

3. Method of building concrete roadways wherein a metal rail is used to define one edge of a mold, characterized by the steps of connecting a metallic marker form continuously to the top of the rail and bracing the form within the mold against the inner face of the rail, pouring concrete about the form within the mold whereby forming a channel in the roadway adjacent to the rail, removing the form by lifting it vertically from the rail, and filling said channel with white concrete.

4. Method of building concrete roadways wherein a metal rail is used to define one edge of a mold, characterized by the steps of continuously overlapping the rail by a sheet metal marker form having a mold portion suspended inside the rail, pouring concrete within the mold about said mold portion from a concrete machine running upon the overlapping part of the marker form whereby forming a cavity in the roadway, and then removing the marker form and filling the said cavity with white concrete.

5. Method of building concrete roadways wherein a metal rail is used to define one edge of a mold, characterized by the steps of continuously overlapping the rail by a series of metal marker forms having aligned mold portions supported from the inner face of the rail, pouring concrete to form the body of the roadway about said mold portions from a concrete machine running upon the overlapping part of the marker forms whereby forming a channel in the roadway, and then removing the forms, and filling said channel with white concrete.

6. Method of building concrete roadways wherein a metal rail is used to define one edge of a mold, characterized by the steps of continuously overlapping the rail by a series of sheet metal marker forms having rail-fitting inverted channel portions and mold portions connected thereto, spreading concrete to form the body of the roadway about said mold portions from a concrete spreading machine running on said inverted channel portions whereby forming a channel in the roadway, removing the marker forms from the rail, and filling said channel with white concrete.

7. Method of building concrete roadways, characterized by the steps of constructing a combined rail and marker form along one edge of the roadway, spreading the concrete body of the roadway from a machine running upon said combined rail and marker form whereby forming a channel in the roadway, removing the marker form, and pouring white concrete in said channel.

8. Method of building concrete roadways, which consists in assembling a combined rail and sectional marker form along one edge of the roadway, pouring the concrete body of the roadway from a machine running on said combined rail and marker form whereby forming a channel in the roadway, removing the marker form section by section without disturbing the rail, pouring white concrete in the channel, and smoothing the entire road surface, including said white concrete, by a machine running on said rail.

9. Method of building concrete roadways, which consists in placing a rail at one side of the roadway location to serve as one wall of a mold and also to guide a movable concrete distributing machine in pouring the concrete body of the road, supporting marker forms upon said rail within the mold, pouring concrete into the mold from said machine during its travel along the forms and rail, and utilizing the weight of the machine to hold the forms down progressively as it travels therealong.

EDWARD L. SHAW.