

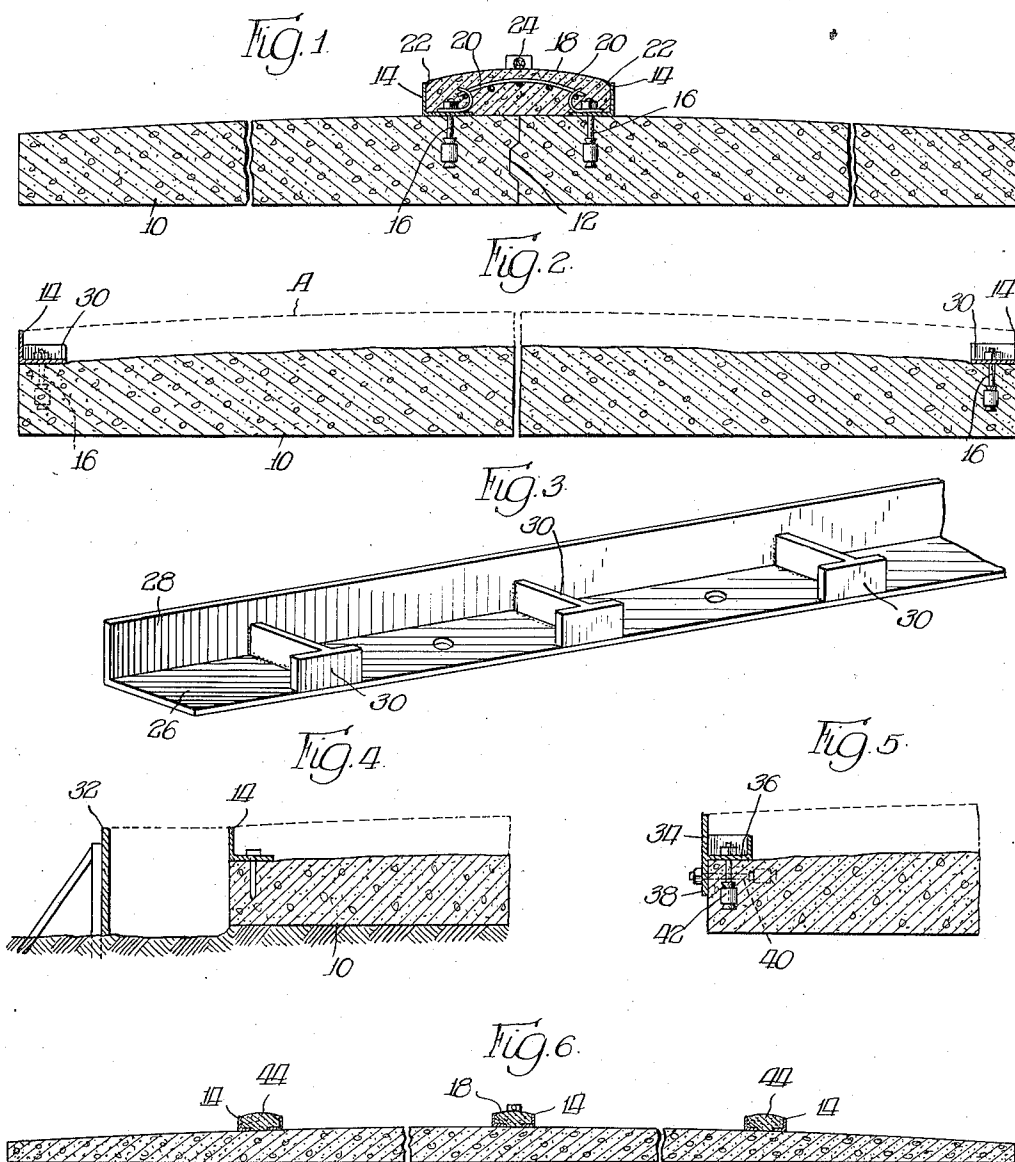
Feb. 15, 1938.

J. W. ISETT

2,108,750

HIGHWAY CONSTRUCTION

Filed Jan. 27, 1937



Inventor:
John Warren Issett,
By Richard Spenner

UNITED STATES PATENT OFFICE

2,108,750

HIGHWAY CONSTRUCTION

John Warren Isett, Hinsdale, Ill.

Application January 27, 1937, Serial No. 122,497

12 Claims. (Cl. 94-4)

This invention relates to highway construction and has for one of its objects the provision of new and improved means to be employed in constructing crowned areas upon the surfaces of highways.

According to the modern methods of highway construction it is frequently desirable to divide the road into two longitudinal strips of traffic lanes by putting a marker in the center of the road. At the present time this marker commonly takes the form of a painted stripe down the center of the road, and although such a marker is highly useful and beneficial, it is not entirely satisfactory owing to the ease with which cars can pass over it to the wrong side of the road. In accordance with one practice of the present invention applicant's means, adapted to be employed in forming crowned or capped areas atop the road, may be advantageously employed to form a raised marker in the center of a road of sufficient height to separate the traffic lanes both visibly and physically, and to sufficient width, if desired, to prevent the overhang of vehicles on the opposite side of the dividing marker from locking or colliding. A feature of the invention which contributes to the accomplishment of this object resides in placing two sets of structural angles horizontal with the road, preferably one on each side of the center joint, if there is a center joint in the road, with a horizontal flange of each angle extending inwardly toward each other and securely fastened to the surface of the road by means of expansion bolts, lag screws, or other suitable means of fastening. The other or vertical flange of the angle assists in serving as a form, and between oppositely facing, vertically extending flanges thus formed, concrete, bituminous concrete, mechanically applied concrete, asphalt, brick, stone or any other suitable plastic or hard-road surfacing material may be placed, with or without the aid of reinforcing rods or the like.

When employed in this manner the outside surfaces of the vertical flanges form wearing plates on the outer edges of the new concrete and thereby prevent the concrete or other substance from crumbling or being chipped away in use. Additionally, the capped or crowned portion extending centrally of the road strengthens the longitudinal joint which is the weak point of highways and thereby prevents the two sides of the road from separating, or one side from sinking below the level of the other.

The invention also contemplates for one of its objects the provision of suitable means to be em-

ployed in the resurfacing of existing highways by the formation upon the old surface of the cap or crown hereinbefore mentioned. This may be accomplished by placing the structural angles along the edge of the old road with the horizontal flanges extending inwardly toward one another and toward the center of the road and securely fastening them in place by means of extension bolts, lag screws or other suitable fastening devices. When so placed, the vertical flanges of the angles serve as continuations of the vertically extending side edges of the old highway or slab. When the angles have been so positioned they serve as confining forms for concrete, asphalt or other suitable material with which the old road bed is covered, the height of the vertical flange of the angle generally determining the height to which the road will be resurfaced. Here again the angles may be left in place, in which event they will prevent the destruction of the rebuilt highway along its outer edges.

An additional object of the invention resides in the provision of suitable means of forming shoulders on the edge of an old road in instances where resurfacing and widening is to take place at the same time. In this instance the angular forms are placed in position in the same manner as for resurfacing and the vertical flange is permitted to serve as an inside form for the added section or width. Here again the forms may be employed with or without the aid of reinforcing rods, mesh and the like.

Other objects and features of the invention will become apparent from a reading of the following specification in the light of the appended drawings, in which

Figure 1 is a front elevational view of a vertical section taken through a highway having its center joint crowned in accordance with the practice of the present invention;

Figure 2 is a front elevational view of a vertical section of a highway in the process of being resurfaced in accordance with the present invention;

Figure 3 is a view in perspective of a form suitable for employment in connection with the invention;

Figure 4 is a segmental view showing the application of the invention to the widening of roads;

Figure 5 is a detailed view of a slightly modified type of form; and

Figure 6 is a front elevational view of a vertical section of a highway showing its division into speed lanes as well as directional lanes.

As illustrated in Figure 1, the cement highway 10 is provided with a center joint 12 of the tongue and groove variety, the purpose of which is to afford uniform transfer of load from one side of the highway to the other. In accordance with modern highway construction it is desirable to divide the highway into two traffic lanes, one for east and the other for west, or one for north and the other for south bound traffic. As already pointed out, the most common form of dividing such highways at the present time resides in employing a painted strip or marker extending lengthwise and centrally of the road. A marker of this type is subject to numerous objections, an outstanding one of which is that it may be crossed over easily and in this sense fails to afford a physical division. In accordance with the present invention, as shown in Figure 1, there may be provided longitudinally extending angle irons or structural shapes of other suitable cross section having vertical flanges extending upwardly from the surface of the highway and horizontal flanges extending inwardly toward one another and adapted to rest upon the surface of the highway. These flanges are secured in position by means of suitable expansion bolts, lag screws or other fastening means 16. When the forms are so positioned a trough is formed positioned centrally and running lengthwise of the road. In this trough may be placed cement concrete, bituminous concrete, mechanically applied concrete, asphalt, brick, stone, wood block, dirt or any other desired material. In the event that a hard surfacing material is used, such as shown in Figure 1 and indicated by the reference numeral 18, suitable reinforcing members 20 may be included, firmly embedded within said material. Also it may be desirable, as indicated by the reference numeral 22, to employ an asphalt or other suitable filler adjacent the upper junction of the material 18 and the vertical flange of the angle iron 14 in order to prevent the penetration of moisture and the consequent weakening of the crown or cap at that point. As shown in Figure 1, the crown may be provided with illumination means in the form of reflecting prisms or surfaces 24 which will serve to illuminate the dividing marker at night. The width of the crown is, of course, arbitrary, although it may be desirable to make it of sufficient width to prevent the overhang of vehicles on the opposite sides of the marker from locking or colliding with one another.

The forms 14, when employed in the manner just described, will be left in position to serve permanently and prevent crumbling or chipping of the crown along the side walls. However, if desired, the crown may be constructed with the position of the angle irons reversed, in which event the horizontal flanges will extend outwardly and may be removed without difficulty after the crown or cap has been completed.

As illustrated in Figure 2, the means for forming the cap or crown have been removed to the side edges of a worn highway, there to be employed in resurfacing. As shown, the horizontal flanges are secured to the road between in the customary manner and the vertical edges serve as forms between which the resurfacing takes place. The dotted line A represents the resurfaced road and corresponds in height to the vertical flange of the forms 14. Although the forms are illustrated in this figure in connection with resurfacing, it is to be foreseen that they might expediently be employed in connection with the construction of highways originally by being

placed in position to receive the lower, outer edge of the slab or sections. When so employed the use of expansion bolts might be dispensed with, although if desired they could be employed, in which instance they would extend upwardly from the horizontal flanges rather than downwardly, and the highway would rest upon the upper surface of the horizontal flanges rather than the flanges resting upon the upper surface of the highway.

A suitable type of form that may be employed in carrying out the invention is illustrated in Figure 3 wherein the reference numeral 26 indicates the horizontal flange, the reference numeral 28 the vertical flange, and the reference numeral 30 certain T-shaped reinforcing portions extending between the two flanges. These portions, in addition to reinforcing both flanges, serve to anchor the forms firmly in place. It is to be appreciated, however, that the invention may be practiced with forms of different types and that the one illustrated, although highly desirable and deemed inventive in this connection, is not the only type which may be used.

Frequently in highway construction it is desired to widen an old concrete road and resurface it at the same time. In such an instance the arrangement shown in Figure 4 may advantageously be employed. As there shown, the form 14 is in position upon the outer edge of the old concrete bed 10 and serves a dual function. In the first place, it performs in the manner described in connection with Figure 2 as a resurfacing means or form, and in the second place, the outer face of the vertical flange serves as a widening form in cooperation with the customary wall member 32. In this arrangement the angle iron or form 14 is removed after the extension has been constructed.

It should be noted that in conjunction with several of the figures and constructions described the upper edge of the vertical flanges of the forms may be employed as leveling surfaces for use in the construction work. For example, in the widening arrangement shown in Figure 4 it has heretofore been customary to provide wooden forms on both sides of the portion to be constructed and to extend anchoring members between these two pieces. When so constructed it is impossible to level the upper surface of the widening arrangement without removing the overlying anchoring members, although in the construction arrangement illustrated in Figure 4 the widening may take place and the leveling be obtained without any difficulty whatsoever.

A slightly modified form of construction is illustrated in Figure 5, in which a T is employed comprising the cross piece 34 and the stem portion 36. This type of form may be advantageously employed in conjunction with the resurfacing of roads by connecting one part 38 of the cross portion 34 with the old road bed by means of suitable expansion bolts or screws 40 and the stem 36 with the old bed, also by means of suitable fastenings 42. According to this type of construction the cross bar of the T protects not only the edge of the new surface, but also the upper and outer edge of the old. This is a particularly rigid and durable type of construction which lends itself preeminently to resurfacing projects.

In Figure 6 there is diagrammatically illustrated a broad highway which is divided, as shown in Figure 1, into directional traffic lanes, namely, north and south or east and west bound, and additionally by means of the crown or cap

portions 44 into speed lanes to keep cars in their respective lanes at all times. Obviously the invention lends itself to the accomplishment of this feature as well as the many others already recited.

Various modifications in design of forms and arrangement of parts may be made without constituting a departure from the invention herein described. Thus, flat plates or strips may be used and re-used in the resurfacing of roads by being attached to the vertical outer wall of the old road during the resurfacing operation. Such plates may be left in place or removed as desired. Similarly, the various angles and forms, and indeed the invention, contemplate employment in connection with the construction or extension of side walls, curbs, gutters, aprons, etc. on old or new highways or adjacent thereto.

Having thus described the invention, what I claim as new and desire to secure by Letters Patent of the United States is:

1. That improvement in the art of highway construction which comprises, in combination, a road bed, a plurality of forms extending longitudinally of said bed, anchoring means extending between the forms and the road bed for securing the former rigidly to the latter, and a crown or cap of solid material extending between said forms, superimposed upon the surface of said highway.

2. That improvement in the art of highway construction which comprises, in combination, a road bed, a plurality of forms extending longitudinally of said bed, anchoring means extending between the forms and the road bed for securing the former rigidly to the latter, said forms including upwardly extending, oppositely facing members, and a crown or cap of solid material extending between said forms, superimposed upon the surface of said highway.

3. That improvement in the art of highway construction which comprises, in combination, a road bed, a plurality of forms extending longitudinally of said bed, anchoring means extending between the forms and the road bed for securing the former rigidly to the latter, said forms including inwardly extending, horizontal flanges and upwardly extending, oppositely facing flanges, and a crown or cap of solid material extending between said forms, superimposed upon the surface of said highway.

4. That improvement in the art of highway construction which comprises, in combination, a road bed, a plurality of forms extending longitudinally of said bed, anchoring means extending between the forms and the road bed for securing the former rigidly to the latter, said forms constituting angle irons, and a crown or cap of solid material extending between said forms, superimposed upon the surface of said highway.

5. That improvement in the art of highway construction which comprises, in combination, a road bed, a center joint in said road bed, a plurality of metallic members arranged to extend longitudinally of said joint, on either side thereof, anchoring means extending between the metallic members and the road bed for securing the former rigidly to the latter, and a filler between said members adapted to span and to crown said joint.

6. That improvement in the art of highway construction which comprises, in combination, a road bed, a center joint in said road bed, a plurality of metallic members arranged to extend

longitudinally of said joint, on either side thereof, anchoring means extending between the metallic members and the road bed for securing the former rigidly to the latter, and a filler between said members adapted to span and to crown said joint, said filler comprising cementitious material and metal reinforcements.

7. That improvement in the art of highway construction which comprises, in combination, a road bed, a center joint in said road bed, a plurality of angle irons arranged to extend longitudinally of said joint, on either side thereof, anchoring means extending between the angle irons and the road bed for securing the former rigidly to the latter, and a filler between said members adapted to span and to crown said joint, said filler comprising cementitious material and metal reinforcements.

8. That improvement in the art of highway construction which comprises, in combination, a road bed, a plurality of metallic members arranged to extend vertically upright from the side edges of said bed, anchoring means extending between the metallic members and the road bed for securing the former rigidly to the latter, and a resurfacing filler between said members arranged to span and to crown said bed.

9. That improvement in the art of highway construction which comprises, in combination, a road bed, a plurality of metallic members arranged to extend vertically upright from the side edges of said bed, anchoring means extending between the metallic members and the road bed for securing the former rigidly to the latter, said metallic members consisting of angle irons having horizontal flanges secured to said bed and vertical flanges forming said vertically extending, upright members, and a resurfacing filler between said members arranged to span and to crown said bed.

10. That improvement in the art of highway construction which comprises, in combination, a road bed, a plurality of metallic members arranged to extend vertically upright from the side edges of said bed, anchoring means extending between the metallic members and the road bed for securing the former rigidly to the latter, said metallic members being T-shaped in cross section, and a resurfacing filler between said members arranged to span and to crown said bed.

11. That improvement in the art of highway construction which comprises, in combination, a road bed, a plurality of metallic members being arranged to extend vertically upright from the side edges of said road bed, cooperating members laterally offset from said vertically extending members and adapted to cooperate therewith in widening said road bed, and a plurality of anchoring means extending between said plurality of metallic members and the road bed for securing the former rigidly to the latter.

12. That improvement in the art of highway construction which comprises, in combination, a road bed, a plurality of metallic members, said metallic members consisting of angle irons, being arranged to extend vertically upright from the side edges of said road bed, cooperating members laterally offset from said vertically extending members and adapted to cooperate therewith in widening said road bed, and anchoring means extending between said metallic members and the road bed for securing the former rigidly to the latter.

JOHN WARREN ISETT.