April 16, 1935. J. N. HELTZEL 1,998,015

ROAD JOINT AND METHOD OF PRODUCING THE SAME

Original Filed July 11, 1924

Fig. 1.

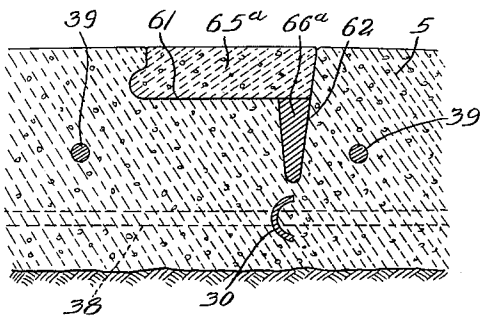


Fig. 2.

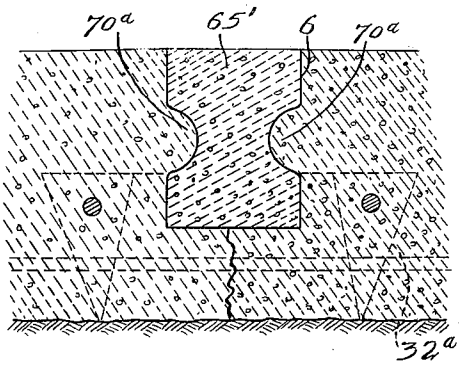


Fig. 3.

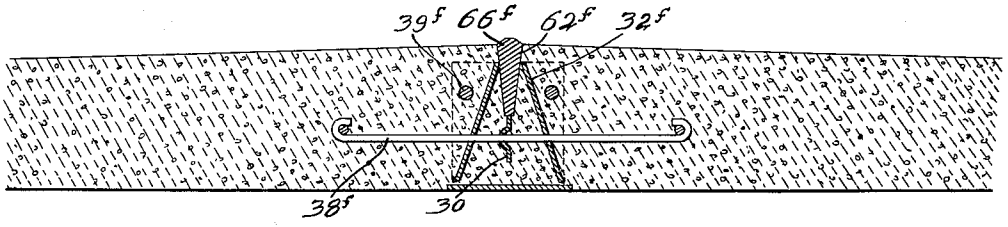
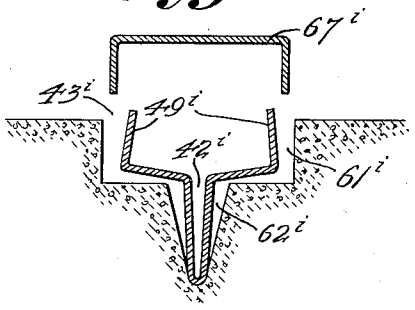


Fig. 4.



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ROAD JOINT AND METHOD OF PRODUCING THE SAME

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Original application July 11, 1924, Serial No. 725,503. Divided and this application April 14, 1930, Serial No. 444,253

20 Claims. (Cl. 94—51)

The present invention relates to improvements in road joints and methods for producing the same, and is a division of my prior copending application entitled collapsible forms, Patent No. 1,768,838, granted July 1, 1930.

An object of the invention is to provide an improved road joint, or joint in other plastic surfacing structure, and method for producing the same in which expansion and contraction of the adjacent sections of the structure will be permitted incident to changes in temperature.

Another object of the invention is to provide means for producing a channel or void in the road when built, usually at the center line thereof, to be subsequently filled, so as to produce a flexible construction joint in the road or other surface, which may also serve as a traffic line or marker.

A further object of the invention is the provision of means for placing a division plate or strip in the road, for dividing the road or other structure into sections or slabs having a flexible construction joint between them, and such means including provision for the convenient formation of a channel or groove in the road above the division plate or strip, to be filled for sealing the joint and producing a traffic line.

A still further object of the invention is to provide an improved method and joint in which a groove is formed in the road or other plastic surfacing structure, thereby inducing a fracture or cleft below the groove for separating the structure into slabs or sections, the groove being filled with waterproof filler for sealing the same and preventing water and moisture from entering the fracture or cleft.

With the foregoing and other objects in view, the invention will be more fully described hereinafter and more particularly pointed out in the appended claims.

In the drawing, in which like symbols refer to like or corresponding parts throughout the several views

Figure 1 is a fragmentary cross section taken through a road or plastic surfacing structure showing an improved joint constructed according to the present invention.

Fig. 2 is a similar view showing a modified form of joint.

Fig. 3 is also a fragmentary vertical cross section through a road or plastic surfacing structure showing a division plate, reinforcement, pedestal for supporting the division plate, and sealing material in the groove above the division plate and

Fig. 4 is also a cross section taken through a fragment of plastic concrete showing a form collapsed in the channel produced therein.

Referring more particularly to Fig. 1, which corresponds to Fig. 7 of my prior application aforesaid, 5 represents generally the concrete road or other plastic surfacing structure, in which the transverse and longitudinal reinforcing rods 38 and 39 may be placed, and which contains, embedded therein, a division plate 30 lying below a groove 62, which contains waterproof plastic sealing material 66*a*. The traffic line 65*a*, of concrete or other appropriate material is contained in the channel 61.

It will be seen that the seal 66*a* is concealed below the traffic line 65*a*. Thus, the seal 66*a* is in the groove 62 flush with the bottom of the channel 61, and the traffic line 65*a* extends the full width of the channel over the seal 66*a*. The division plate or strip 30 is preferably of arcuate section, with its upper and lower edges spaced from the sub-base and seal 66*a*. The concrete will break or crack between the portion 62 of the channel or groove and the strip 30, and between the lower edge of said strip 30 and the sub-base, to provide the construction joint having the interlocking tongue and groove produced by the arcuate form of the strip 30.

Referring now more particularly to Fig. 2, which corresponds to Fig. 9 of my copending application aforesaid, the concrete roadway or plastic surfacing structure is formed with a groove or channel 6 by any suitable means, such for instance as the form illustrated in Fig. 8 of the parent application referred to. In the formation of this groove, ribs 70*a* are produced on the sections or slabs of concrete separated by the groove 6. The channel or groove 6 is subsequently filled with concrete or other plastic material to provide the traffic line and joint member 65′ having grooves interlocked with the ribs or tongue 70*a*.

The road will fracture or crack under the member 65′, as indicated, to divide the same into two opposite side sections or slabs connected by the flexible construction joint. At 32*a* is indicated a pedestal for supporting the collapsible form for producing the channel or groove 6.

Referring more particularly to Fig. 3, which corresponds to Fig. 17 of the parent application aforesaid, the roadway or plastic structure is formed with a V-shaped groove 62*f*, which is filled with asphalt, tar or similar material to provide a seal 66*f* closing the joint. The seal also provides the traffic line. The division plate 30 is shown as extending below the groove 62*f* and being supported in a pedestal 32*f*, which also

serves to support the reinforcing rods 38f and 39f. The sealing material 66f will prevent water or moisture from getting down into the groove 62f and into the fracture or cleft below the groove, which upon freezing might disrupt the roadway. The joint material 66f may consist of premolded or poured material to fill the open joint produced by the removable plate, the dowel bars 38f being located at a suitable distance below the groove to tie the slabs together after the crack has formed under the joint material.

Referring more particularly to Fig. 4, which corresponds to Fig. 26 of the parent application, the collapsible form 43i is of T-shape, and comprises the angle side portion 49i connected by a V-shaped portion 42i, and a top or cover plate 67i is adapted to be positioned between the angle portions 49i, said top plate being of channel shape with its flanges depending to overlap the inner sides of the angle portions 49i.

The portion 42i tends to spring to laterally contracted position, as shown, so as to contract the lower or body portion of the form when the top plate 67i is removed, said top plate, when inserted, holding the form expanded.

Fig. 4 shows a channel 61i formed in the surface of the concrete by the form, with the top plate 67i removed, so that the lower or body portion of the form will be contracted transversely for ready removal from the channel without chipping or loosening the concrete from the edges of the channel. The portion 42i of the form defines a V-shaped groove 62i below the bottom of the channel 61i proper between the side walls of the channel. The groove 62i may receive the sealing material, such as asphalt or tar, while the channel portion 61i may receive the concrete or other material to form the traffic line. The concrete may crack below the groove 62i to separate the plastic structure into slabs or sections.

It is understood that in Fig. 1 it may not be required to use the reinforcing rods 38 or the plate 30; likewise, in Figure 3 it may not be required to use the reinforcing rods 38f and 39f or the plate 30.

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

1. A plastic surfacing structure comprising a plastic body having a groove therein and a channel above the groove, a division plate embedded in the plastic body below the base of said groove, a sealing material filled into said groove, and concrete material filled into said channel above the sealing material.

2. The method of constructing roads, consisting of positioning dowel rods transversely of the roadway and substantially midway of the road, pouring concrete about the dowel rods, forming a groove in the surface of the concrete to extend down substantially to the dowel rods, and filling the groove with a joint material.

3. The method of constructing roads, consisting of positioning transverse dowel rods above the sub-base of the roadway, pouring and finishing the concrete over the dowels, and then forming a groove over the dowel rods to induce a longitudinal crack under the groove.

4. The method of constructing concrete roads, consisting of positioning dowel rods above the sub-base, pouring and finishing the concrete over the rods, and positioning a joint producing means over the rods to form a groove in the concrete, finishing the concrete and filling the groove with a material to produce a joint and a traffic line in the surface of the roadway.

5. A joint producing means comprising a member to seat on the subgrade of a road under construction, and means provided at the top portion of the member to support and align a joint strip in a spaced position above the subgrade to receive plastic concrete to be poured under and over the strip to produce a joint in the roadway.

6. The method of constructing concrete roads, consisting of supporting a joint strip in a suspended position above the subgrade of the road under construction, and pouring the concrete over and under the strip to produce a separation of the concrete at the upper surface of the roadway.

7. The method of building concrete roads, consisting of positioning a joint strip above the subgrade of a roadway under construction, and positioning a dowel rod at right angles to and under the strip, pouring the concrete over and under the strip and finishing the surface of the concrete over the strip, and removing the strip to produce a groove in the top surface of the concrete to induce a fracture of the concrete below the groove, the dowel rods preventing separation of the slabs.

8. The method of constructing concrete roads, consisting of positioning a joint strip above the subgrade of a road under construction and a straight dowel rod under and at right angles to the strip, pouring the concrete over and under the strip and the rod to produce a groove in the top surface of the roadway to cause a break of that portion of the slab under the groove, and preventing separation of the slabs by the dowel rod.

9. The method of controlling cracks in concrete roadways, consisting of the positioning of a deformed plate above the subgrade and below the top surface of the roadway under construction, and inserting a dowel rod through the deformed plate to prevent separation of the slabs after the crack has formed longitudinally of the plate.

10. The method of constructing combination joints and traffic lines in concrete roads, consisting of positioning a removable form above the subgrade of a road under construction, pouring the concrete over and under the form and finishing the surface of the road over the form and removing the form to produce a narrow groove lowermost of the form and a comparatively wide channel over the groove, thereafter filling the groove and the channel with suitable material.

11. The herein described method of building roads which consists in supporting a division plate on the subgrade, pouring concrete about the plate, forming a groove in the concrete in alinement with the division plate, forming a channel in the upper surface portion of the concrete registering in part with said groove, and introducing waterproof material into said channel and above said groove.

12. The method of constructing concrete roads, consisting of supporting a joint producing member in a suspended position above the subgrade of a road under construction, projecting a rod through the member to prevent separation of the road slabs, pouring the concrete over and under the member, and producing a separation of the concrete at the upper surface of the road.

13. The method of constructing concrete surfacing structures, consisting in positioning a joint strip and longitudinal and transverse reinforcing

above the subgrade of a road under construction, passing transverse reinforcing through the strip, pouring the concrete about the strip and reinforcing, and positioning a wide traffic line over the strip longitudinally of the road.

14. A concrete surfacing structure comprising joint defining means and reinforcement embedded therein, said reinforcement including rods engaging said means, and supporting means for holding both the reinforcement and joint defining means above the subgrade of the roadway to permit concrete to flow and unite under the means whereby said concrete may thereafter break longitudinally of the means.

15. A combined traffic line and contraction joint for concrete roads comprising a longitudinal joint strip embedded in the concrete and spaced above the subgrade, dowel rods passing through the strip and embedded in the concrete slabs at opposite sides of the strip to prevent separation of said slabs, and an enlarged mass of joint material overlying the strip and exposed to the road surface to form a traffic line.

16. A concrete road comprising a longitudinal traffic line of comparatively great width, longitudinal reinforcing elements embedded in the road, a longitudinal joint defining strip underlying said traffic line, transverse tie bars passing through said strip, the ends of said bars being united with the first named reinforcing elements on each side of the strip to prevent lateral separation of the road slabs.

17. In a concrete road, a joint plate to be positioned above the sub-base of a road under construction, transverse rods passing through the plate, and longitudinal reinforcing members positioned on each side of the plate and engaging the transverse rods.

18. In a concrete road, a joint member to be positioned above the sub-base of a road under construction, a reinforcing positioned at each side of the member, transverse rods passing through the member, said rods engaging the reinforcing to tie the reinforcing and the rods together.

19. In a concrete road having reinforcing positioned therein, said reinforcing spaced apart longitudinally along the center of the road, a division forming strip positioned above the subgrade and longitudinally of the road between the spaced reinforcing, and transverse tie rods passing through the strip, said rods being assembled with the spaced reinforcing on each side of the strip.

20. A joint and traffic line producing form comprising a substantially U-shaped member to be positioned in plastic concrete of a road under construction, said member being spaced above the sub-base of the road, the member being open at the top to receive a second member to be positioned within the open top of the first member to retain said first member in an expanded condition and for preventing concrete flowing into the first member, said first member being capable of being contracted when the said expanding member is removed to facilitate the removal of said first member from the plastic concrete.

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