

April 11, 1933.

J. N. HELTZEL

1,903,456

CONCRETE JOINT

Filed Nov. 19, 1926

2 Sheets-Sheet 1

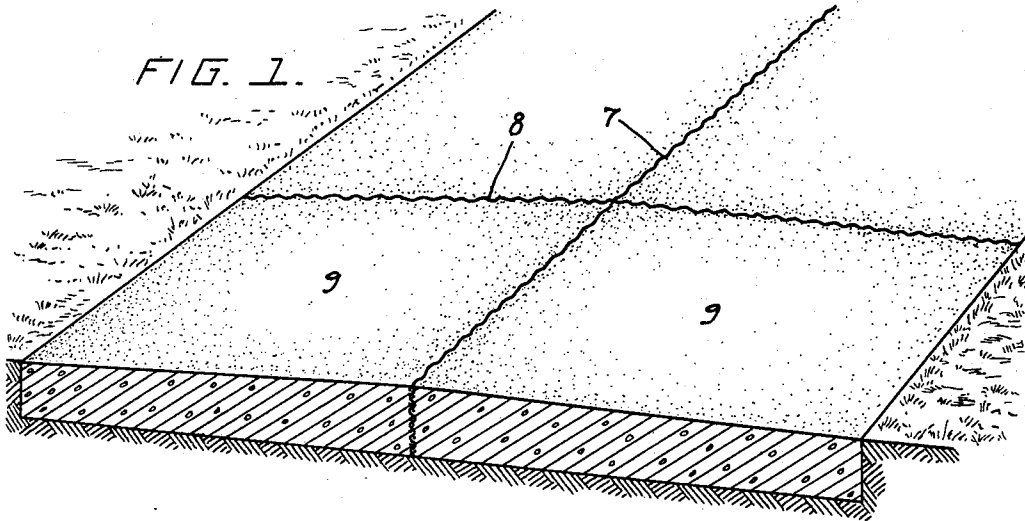


FIG. 2.

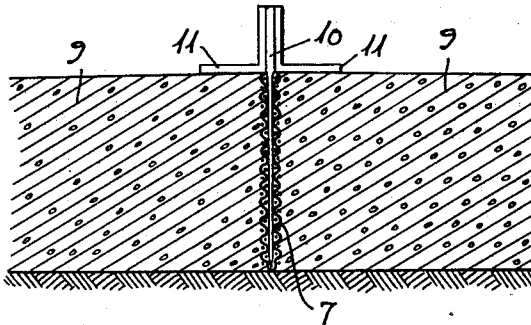
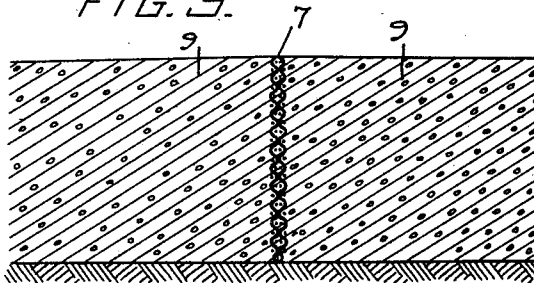


FIG. 3.



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2 Sheets-Sheet 2

FIG. 4.

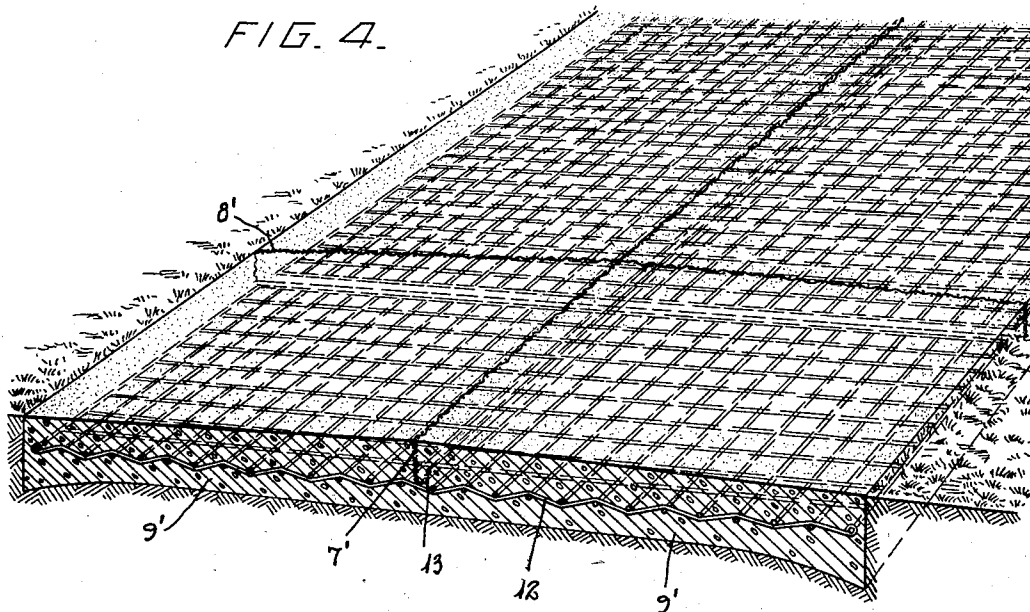


FIG. 5.

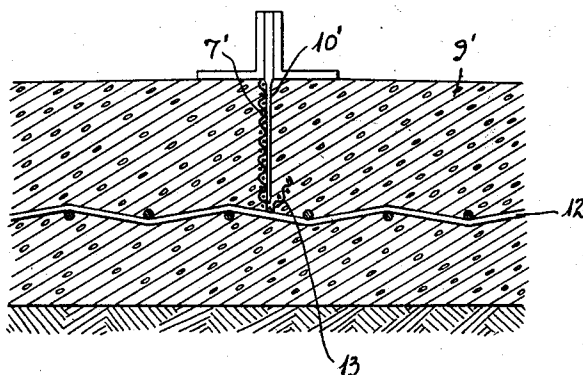
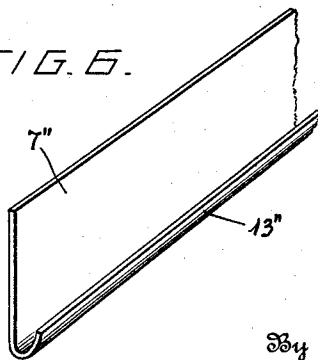


FIG. 6.



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CONCRETE JOINT

Application filed November 19, 1926. Serial No. 149,442.

The present invention relates to concrete joints, such as intended for concrete roads and other surfacing structures, and it is the object of this invention to provide novel and improved means for controlling the breaks and defining the joints of the road or other cementitious structure, this invention being an improvement over the joints disclosed in my copending application Serial No. 3,972, filed January 22, 1925.

With the foregoing and other objects in view, which will be apparent as the description proceeds, the invention resides in the construction and arrangement of parts, as hereinafter described and claimed, it being understood that changes can be made within the scope of what is claimed, without departing from the spirit of the invention.

The invention is illustrated in the accompanying drawings, wherein—

Figure 1 is a perspective view of a concrete road having longitudinal and transverse joints according to the present invention.

Fig. 2 is a cross section through a joint illustrating the method of producing the joint, using a double strip or sheet.

Fig. 3 is a cross section of the completed joint.

Fig. 4 is a perspective view of a concrete road illustrating a modification in the improvements.

Fig. 5 is a cross section through a joint illustrating the method of producing the joint as shown in Fig. 4.

Fig. 6 is a fragmentary perspective view illustrating a sheet metal joint strip that may be used in lieu of the foraminous strips shown in Figs. 4 and 5.

In carrying out the invention in the building of a concrete road, a longitudinal strip 8 is embedded in the plastic concrete, preferably along the longitudinal center line of the road, for defining the longitudinal break or joint. Transverse strips 8 may also be embedded in the concrete to define the transverse breaks or joints, and the strips 7 and 8 divide the road into slabs or sections 9 in order to take care of the expansion and contraction of the concrete without the concrete

spalling or crumbling along the breaks or joints. As shown, the strips 7 and 8 extend from the sub-base to the surface of the concrete, and said strips are composed of wire screen, fabric, perforated paper or other foraminous material which is also flexible. As shown, the strips are composed of mesh and have spaced vertical and horizontal strands, wires or elements crossing one another and interwoven. Such strips being embedded or forced into the plastic concrete will separate the coarser particles of the aggregate, such as the broken stones, the apertures in the strips being sufficiently small to prevent the stones or larger particles from passing through, whereas the sand and cement may flow through the apertures, so that the fine particles of the mixture will amalgamate the slabs or sections. However, the strips 7 and 8 will produce weakened lines so that when the green concrete dries out and hardens, and the concrete contracts, the concrete will break or divide along the lines of the strips. This will control the breaks, and the breaks will occur along definite lines instead of being irregular such as when natural breaks are permitted to occur. The strips being of fine mesh or having small apertures will prevent the stones or coarser aggregates from overlapping along the lines of the joints, and comparatively smooth or clean breaks will thus occur between the slabs or sections 9.

After the concrete has contracted and become broken along the lines of the strips, to define the regular joints, the adjacent portions of the slabs will come together, when the slabs expand, throughout the thickness of the slabs so as to provide bearing surfaces between the slabs equal to the thickness of said slabs, and thereby reducing to a minimum the possibility of the concrete spalling off or crumbling under compression strains along the joints when the slabs are expanded.

The sheets 7 and 8 may be of single thickness, or, as shown in Figs. 2 and 3, may be of doubled material, such as is disclosed in my copending application Serial No. 3,972 above referred to. Thus, as shown in Fig. 2, the doubled strip or sheet 7, while disposed

on a mandrel blade 10, may be forced down into the concrete while it is plastic, the blade 10 having outstanding flanges 11 to come into contact with the surface of the concrete for finishing same off along the strip 7. The blade 10 is then withdrawn, leaving the strip in the concrete, as seen in Fig. 3, and the finer portion of the plastic mixture will pass through the apertures or pores of the strip so as to amalgamate the concrete through the strip, but leaving a weakened plane or line along the strip, so that the concrete, when hardened, will break along said weakened line.

The joint strips, as illustrated, extend down to the sub-base but, if desired, the strips may extend only part way down through the concrete, in order to control the breaking of the concrete along the definite lines of the strips, for example, as shown in Figs. 4 and 5, wherein the strip 7' of wire mesh or other foraminous material extends only part way down into the concrete from the upper surface thereof to the reinforcing rods or mesh 12 embedded in the concrete between the sub-base and surface of the concrete. Such reinforcement or mesh is embedded in the concrete and the strips 7' is forced down into the material before it has set. The transverse strips 8' may be the same as the strips 7' or may extend down to the sub-base, the rods or mesh 12 being interrupted along the transverse lines where the transverse joints occur, in order that the slabs or sections 9' may separate at the transverse joints due to contraction, and said rods tie the slabs 9' together across the longitudinal joint in order to prevent separation of the slabs along the longitudinal joint; but, permitting of flexing along said longitudinal joint.

The lower edge portion of the strip 7' is bent back to one side, as at 13, to form a hook to engage over the lower edge of a depositing blade 10' which is employed for forcing the strip into the material. The bent back edge portion or hook 13 will also serve as an anchor for anchoring the strip in the material when the blade 10' is withdrawn. The edge portion or hook 13 of the strip therefore facilitates the depositing of the strip into the plastic material, and provides an anchor to prevent the strip from being lifted from the material when the blade is withdrawn. This same feature may be used in various kinds of strips.

For example, Fig. 6 illustrates a strip 7'' of imperforate sheet metal having its lower edge portion bent back, as at 13'', for the same purpose.

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

1. A concrete surfacing structure having reinforcement embedded therein below its upper surface, and a foraminous strip embedded in the concrete between said rein-

forcement and upper surface of the concrete to define the line of break of the concrete.

2. A concrete surfacing structure having a break-defining strip embedded therein in a substantial vertical plane with the lower edge portion of said strip bent back and forming an elongated open hook and anchoring said strip.

3. A joint strip to be depressed into and embedded within concrete in a substantial vertical plane, having its lower edge portion bent back and forming an elongated open hook, so as to receive the lower edge of a blade used for forcing the strip down into plastic concrete, and said hook also anchoring the strip in the concrete.

4. A substantially vertically disposed joint of a concrete surfacing structure, comprising a foraminous strip embedded in the concrete and having small apertures separating the coarser particles of the aggregate and through which the finer particles are amalgamated.

5. A joint member for insertion in a substantially vertical plane in a concrete surfacing structure comprising a strip of foraminous material having one edge thereof bent back to form an elongated open hook.

6. In a concrete surfacing structure, a joint strip of wire mesh imbedded in said concrete and extending from the top surface partially therethrough, said strip being formed with the mesh thereof of a size to separate the coarser particles of the aggregate, while permitting amalgamation of the finer particles therethrough.

7. A division strip adapted to be disposed in a substantially vertical plane and to be forced down into plastic concrete, the lower edge portion of said strip being bent back to form an elongated open hook for stiffening the lower portion of the strip, anchoring the strip in the concrete and receiving the lower edge of a blade or implement employed for forcing the strip down into the concrete.

In testimony whereof I hereunto affix my signature.

JOHN N. HELTZEL.