Nov. 11, 1941. F. O. HELTZEL 2,262,677

DOWEL FOR CONCRETE ROADS

Filed Feb. 6, 1939

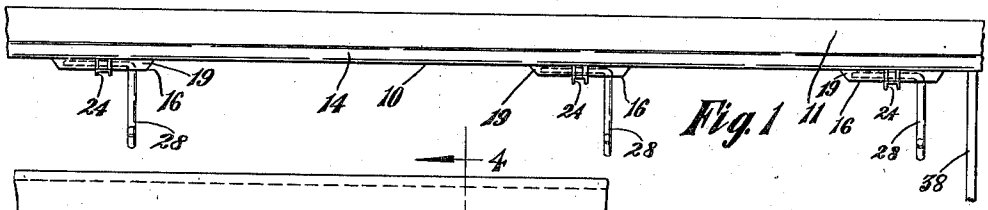

Fig. 1

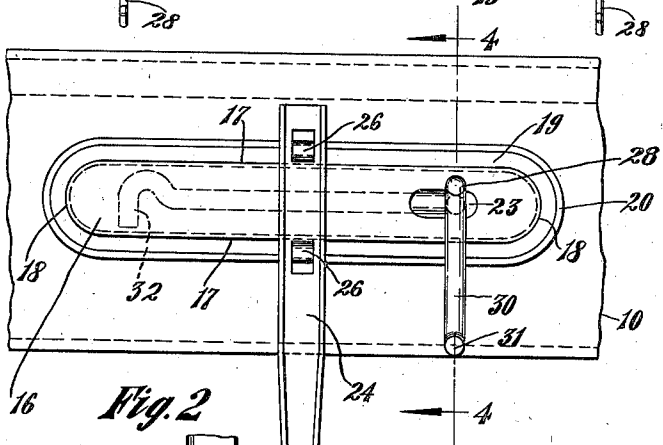

Fig. 2

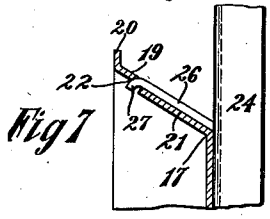

Fig 7

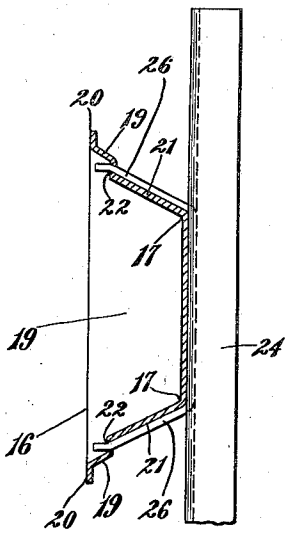

Fig 3

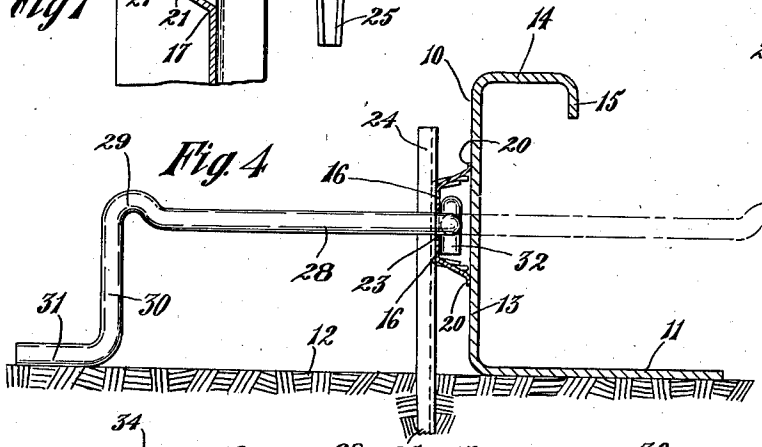

Fig. 4

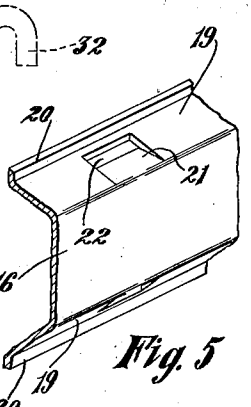

Fig. 5

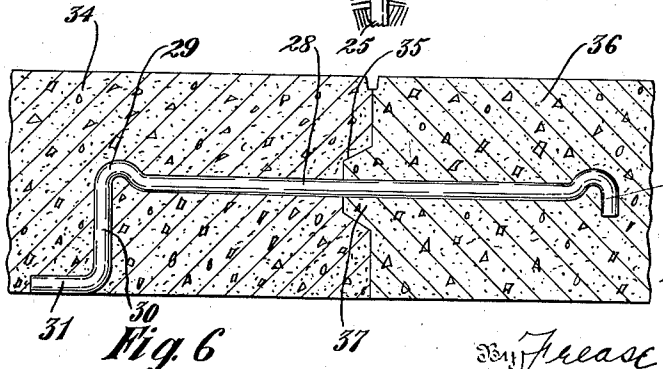

Fig. 6

Inventor

Francis O. Heltzel

By Frease and Bishop

Attorneys

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DOWEL FOR CONCRETE ROADS

Francis O. Heltzel, New Kensington, Pa.

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2 Claims. (Cl. 94—4)

The invention relates to dowels for concrete structures, and more particularly to a dowel construction especially adapted for use in the longitudinal joints on multiple lane concrete roads.

An object of the improvement is to provide a novel form of sheet metal slab lock key or pan adapted to be located at spaced intervals along the longitudinal joint of a concrete road and adapted to form spaced sockets in the concrete slabs on one side of the longitudinal joint and corresponding spaced tongues upon the other side of the joint, locking the slabs upon the opposite sides of the longitudinal joints together so as to prevent relative vertical movement thereof.

Another object is to provide a simple and novel manner of connecting these key locks or pans to stakes for supporting the pans in position for pouring of the concrete.

A further object is to provide a simple construction of dowel bar arranged to be supported by each key lock or pan.

The above objects together with others which will be apparent from the drawing and following description or which may be later referred to may be attained by constructing the improved dowel in the manner illustrated in the accompanying drawing in which

Figure 1 is a top plan view of a section of road form showing a plurality of the improved key locks or pans with dowel bars mounted in position for pouring of the concrete;

Fig. 2, an enlarged elevation of one of the key locks or pans with the stake for supporting the same showing a dowel bar carried thereby and a portion of the road form;

Fig. 3, an enlarged transverse sectional view through the key lock or pan and the upper portion of the stake supporting the same;

Fig. 4, a transverse sectional view taken as on the line 4—4, Fig. 2;

Fig. 5, a fragmentary perspective of the central portion of one of the improved key locks or pans;

Fig. 6, a transverse sectional view through the finished longitudinal joint of the road, and

Fig. 7, a fragmentary transverse sectional view through a modified form of key lock or pan.

Similar numerals refer to similar parts throughout the several views.

The road form indicated generally at 10 may be formed of sheet metal in sections of suitable length, and, as shown in the drawing, may comprise the horizontal bottom flange 11 adapted to rest upon the sub-grade indicated at 12, the vertical portion 13, and, if desired, the overhanging horizontal flange 14 at its upper edge which may terminate in the downturned edge portion 15.

Sections of this road form are located in alignment longitudinally along the roadway at the point or points where the longitudinal joints between lanes are to be located.

The improved slab lock key or pan forming an important part of the invention is indicated generally at 16. These pans are formed of sheet metal and may be of geenrally oval shape, as best shown in Fig. 2, being provided with straight upper and lower edges 17 and rounded ends 18, the entire outer contour of each pan being surrounded by a flared flange 19 terminating in the angular edge portion 20.

The central portion of each upper and lower flange 19 of the pan is provided with a socket or depression 21 flared outwardly from the body of the pan toward the outer edge of the flange and provided with a slot 22 in its outer edge. An opening 23 is formed in the body portion of each pan at a point near one end thereof.

A metal stake 24, preferably of channel cross-sectional shape, as shown, and tapered toward its lower end as at 25, is provided for supporting each slab lock key or pan.

These stakes are driven into the sub-grade at spaced intervals as indicated in Fig. 1, so as to locate pans 16 with their open or outer sides in contact with the adjacent side of the road form 10 in the manner shown in Fig. 4, the pans being preferably spaced about five feet apart along the entire length of the road form.

Each stake is provided with a pair of diverging spring tongues 26 stamped out from the stake and sprung inward so as to frictionally engage in the sockets or depressions 21, with their ends located through the slots 22, as shown in Fig. 7, the tongues, if desired, may be provided with the inturned hooked ends 27 for engagement in the slots 22.

To attach the pan upon the stake the tongues 26 are located in the depressions or sockets 21 of the pan with the ends thereof located through the slots 22 in the pan, as best shown in Fig. 3 of the drawing. The pan is thus rigidly supported in proper position upon the stake and will be held in this position until the concrete is poured, after which the pan may be removed by disengaging the ends of the tongues from the slots 22 so that the pan may be removed, leaving an oval tapered socket in the concrete at this point.

The dowel bar may be in the form of a metal rod 28 having one end kinked as at 29 and downturned as at 30 terminating in the outturned

horizontal end portion 31 adapted to be rested upon the sub-grade 12 when the central portion of the bar is located through the aperture 23 in the pan 16. The other end portion of the bar is bent at right angles so as to lie within the pan as best shown in Figs. 2 and 4 and terminates in the downwardly hooked end 32.

After the concrete has been poured on one side of the roadway, the road form 10 is removed and the bent back angular portion of the dowel bar is bent out to the position shown in broken lines in Fig. 4, after which the pan 16 may be detached from the stake 24 and removed, thus, leaving the one half of the dowel bar embedded in a slab of concrete as indicated at 34 and provided at spaced intervals with the oval tapered sockets 35.

The concrete is then poured upon the other side of the road as indicated at 36 embedding the other half of the dowel bar therein and forming tapered oval tongues or lugs 37 within the sockets 35, thus, providing slab lock keys for locking the two slabs of concrete against relative vertical movement along the longitudinal joint and embedding the dowel bars in both slabs so as to provide for load transfer along the longitudinal joint.

It should be understood that the usual premolded expansion joints as indicated at 38 are located at spaced intervals transversely of the roadway and preferably at points close to one of the dowels above described, as indicated in Fig. 1.

I claim:

1. A dowel structure for concrete roads including a sheet metal slab lock key in the form of a pan having a flat wall and a continuous, forwardly flared flange around its entire edge, the central upper and lower portions of the flange having slots therein, a stake for supporting the slab lock key, and a pair of diverging spring tongues upon the stake for frictionally engaging the upper and lower portions of the flange and having their ends located through said slots.

2. A dowel structure for concrete roads including a sheet metal slab lock key in the form of a pan having a flat wall and a continuous, forwardly flared flange around its entire edge, the central upper and lower portions of the flange having slots therein, a stake for supporting the slab lock key and a pair of diverging spring tongues upon said stake having hooked ends for engaging said slots.

FRANCIS O. HELTZEL.