Aug. 11, 1964 G. O. GAETKE 3,143,783

CONCRETE SLAB KEY JOINT FORMING STRIP

Filed Nov. 27, 1962

Fig. 1.

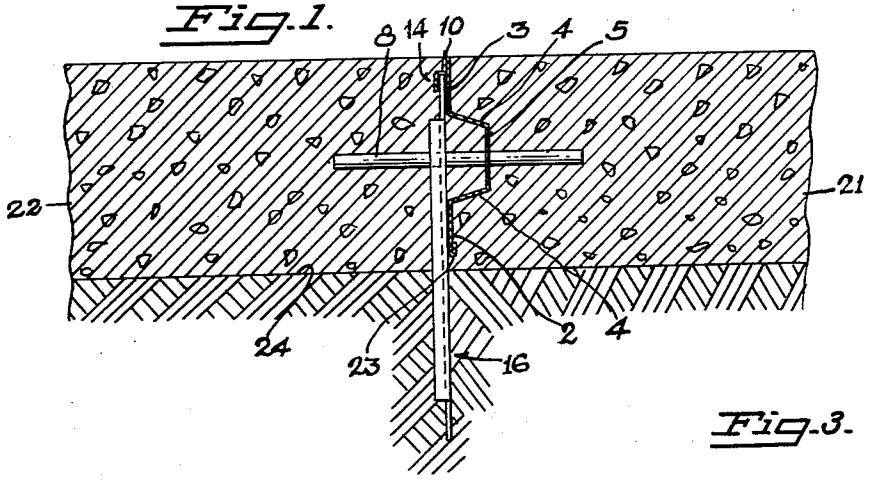


Fig. 2.

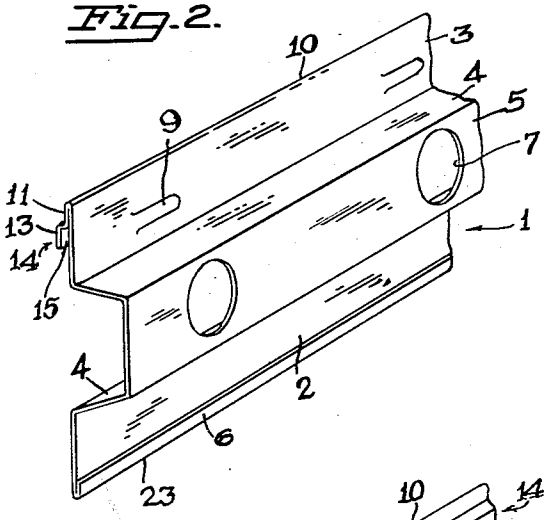


Fig. 3.

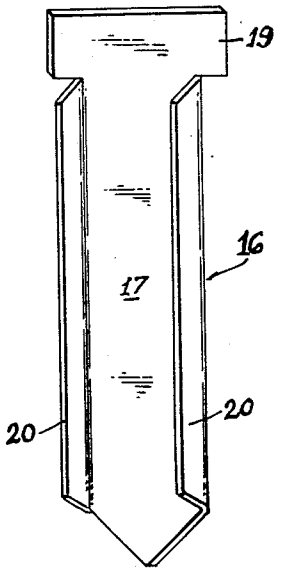
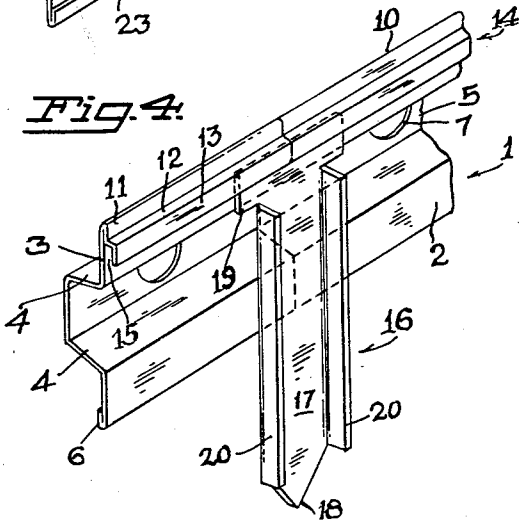


Fig. 4.



INVENTOR.
GEORGE O. GAETKE

BY

J. E. Trabucco
ATTORNEY

United States Patent Office 3,143,783 Patented Aug. 11, 1964

3,143,783

CONCRETE SLAB KEY JOINT FORMING STRIP

George O. Gaetke, San Francisco, Calif., assignor to Burke Concrete Accessories, Inc., a corporation of California

Filed Nov. 27, 1962, Ser. No. 240,272
2 Claims. (Cl. 25—118)

This invention relates to the construction of concrete slabs and more particularly to a concrete slab key joint forming strip which is utilized in the construction of concrete slabs for roadways, building floors and air field runways.

The present invention provides an improved concrete slab key joint forming strip preferably constructed from sheet metal, used between adjacent slabs of poured concrete to form a tongue and groove interlocking joint which permits the expansion and contraction of the slabs due to changes in temperature while at the same time preventing the vertical displacement thereof. The key joint forming strips embodying the present invention are adapted to be suspended on suitably placed metal stakes driven into the ground or road sub-grade with their upper ends uniformly arranged well below the grade level. After the metal stakes are driven into the ground along the boundaries of the proposed concrete slab sections and arranged with their upper ends at suitable heights, the metal strips are suspended by means of inverted L-shaped flanges formed thereon from the stakes. When so positioned, the upper edges of the strips will be disposed well above the upper ends of the stakes and will serve as a screed or supporting means for a concrete leveling member used in smoothing the concrete after it is poured on the sub-grade of the roadway. The metal strip is provided in the usual manner with suitably spaced apertures for accommodating metal dowels and the like employed for reenforcing purposes between adjacent concrete slabs. The supporting stakes are adapted to support adjacent strips in end to end abutting relationship rather than in overlapping positions, thereby avoiding irregular lines along the exposed upper edges of the strips.

An object of the present invention is to provide a concrete slab key joint forming strip employed in the construction of concrete roadways, floors and air field runways, which is provided with an inverted L-shaped flange positioned well below the upper end of the strip for suspending the strip from a number of metal stakes driven into the prepared sub-grade, thereby to be automatically positioned and supported so concrete material may be poured on the sub-grade first at one side of the strip to form a concrete slab or section and then at the latter's other side to form an adjacent section, thereby covering and concealing the inverted L-shaped flange and leaving the upper edge of the strip exposed so it may be used as a leveling rod support in smoothing the surface of the adjacent concrete slabs and subsequently to provide a line marker defining the center of the roadway.

A further object of my invention is to provide a key joint forming strip for use between adjacent sections of poured concrete which is so shaped and constructed as to form an interlocking tongue and groove joint between such sections, permitting their expansion and contraction but not their vertical displacement.

Other and further objects of my invention will be pointed out hereinafter or will be indicated in the appended claims or will be obvious to one skilled in the art upon an understanding of the present disclosure. For the purpose of this application, I have elected to show herein certain forms and details of a key joint forming strip and support which is representative of my invention; it is to be understood, however, that the embodiment of my invention herein shown and described is for purposes of illustration only, and that therefore it is not to be regarded as exhaustive of the variations of the invention in the art.

In the accompanying drawing:

FIG. 1 is a vertical section through adjoining concrete sections of a concrete road showing the metal strip comprising the present invention supported therebetween;

FIG. 2 is a perspective view of a part of the metal strip;

FIG. 3 is a perspective view of a metal stake embodying the principles of my invention; and

FIG. 4 is a perspective view of the metal strip and supporting stake, showing the manner in which the stake is employed in supporting adjacent ends of two (2) adjoining strips.

Referring to the drawing, the numeral **1** designates a concrete key joint forming strip embodying the principles of the present invention, made preferably from sheet metal such as aluminum or steel, although it may be made from a suitable plastic also. The strip **1** comprises a lower planar portion **2**, an upper co-planar portion **3**, outwardly extending planar portions **4**, **4** arranged preferably in converging relationship with respect to each other, and an intermediate planar portion **5**. The lower edge of the lower portion **2** is suitably folded over to provide a reenforcing bead **6** for increasing the rigidity of the strip. The outwardly converging portions **4**, **4** together with the intermediate portion **5** forms a longitudinally extending protrusion or key deformation portion of semi-hexagonal shape which is adapted to form a tongue and groove joint between the adjacent faces of the concrete slabs constructed at opposite sides of the strip. The intermediate portion **5** is provided with a number of suitably spaced apertures **7** which are adapted to receive metal dowels or rods **8** slidably. The upper planar portion **3** is provided with a number of longitudinally spaced punched out tongues **9** which, when the strip is used as a header board, provide suitable connecting means between the strip and the adjacent concrete section or slab for preventing the strip and the concrete slab from separating when the latter hardens and contracts.

The upper planar portion **3** is folded or bent over at its upper edge in a direction away from the key deformation portion to provide a narrow upper straight edge **10** on the strip. The folded over portion **3** extends downwardly against the latter as at **11**, then outwardly at substantially right angles as at **12**, and then downwardly as at **13**. The outwardly and downwardly disposed portions **12** and **13** form an inverted L-shaped flange or member **14** which in combination with the adjacent side of the upper planar portion **3** forms a socket **15** adapted to receive the upper end portion or head of a metal stake **16**.

The roadway strip embodying the present invention is adapted to be suspended on and supported by a number of suitably aligned substantially vertical stakes **16** driven to predetermined depths into the prepared sub-grade or ground upon which a concrete crown is to be constructed. A stake **16** comprises an elongated planar portion **17** having a pointed lower end **18** and a co-planar elongated head **19** which is adapted to fit in the socket **15** slidably. The stake **16** comprises narrow outwardly disposed flanges **20**, **20** which extend longitudinally at substantially right angles with respect to the portion **17**. The outwardly disposed portion **12** of the inverted L-shaped flange **14** forming the upper side of the socket **15** is positioned substantially below the upper straight edge **10** of the strip **1**, and since such portion **12** rests on the head **19** of the stake, it will position the strip so the upper edge **10** thereof is well above the said head and the flange **14**.

The roadway strip **1** may vary in width in accordance with the desired thickness of the concrete sections or slabs **21** and **22**, but in normal practice the height of the

strip should be such that with its lower edge **23** spaced slightly above the prepared sub-grade **24** its upper straight edge **10** will be disposed at the grade level of the upper surfaces of the slabs. Preparatory to the formation of the slabs, a number of stakes **16** will be driven to a suitable depth into the prepared sub-grade or ground along a predetermined line defining the inner edge of the concrete slab **21**, so that the upper straight edge **10** of the strip will be at the desired grade level. The strip is then arranged in a supported position on the stakes **16** by placing the inverted L-shaped flange **14** over the heads **19** so the latter extend into the socket **15** and engage with the horizontal portion **12**. For reenforcing purposes, metal dowels **8**, suitably treated with a lubricant, are inserted through the apertures **7** and together with a reenforcing grid (not shown) are arranged in substantially horizontal positions, after which concrete is poured on the sub-grade first at the side of the strip having the key deformation portion to form the concrete slab **21** and then on the opposite side to form the slab **22**. The concrete when poured on the sub-grade to form the slab **22** will flow into the concavity formed by the key deformation portion of the strip **1**, thereby completing the formation of a tongue and groove type of juncture between the slabs. After the pouring of the concrete to form the slabs **21** and **22**, its upper surface may be suitably leveled or smoothed by means of a rod or leveling member which may be supported during its back and forth movement on the upper straight edge **10** of the strip.

As shown in FIG. 4, the adjacent ends of two (2) aligned strips may be arranged in end to end relationship and thereafter supported in such relative positions by means of the head **19** of a stake **16**. In this arrangement, the lateral portions of the head **19** extend into adjacent end portions of the sockets **15** of the two (2) strips, thereby providing a common support for the adjacent ends of the strip. The abutting ends of the strips are thus supported and normally held against relative displacement without the necessity of having such ends arranged in overlapping relationship, thereby avoiding irregular lines along the exposed upper edges of the strips.

It will be noted that the heads **19** of the stakes being positioned well below the upper exposed edges **10** of the strips, and being covered by the concrete material overlying the inverted L-shaped members, will continue to be concealed beneath the upper surface of the roadway even though the upper edge portions of the strips might be worn down by the continued travel of vehicles over the roadway.

It is also to be noted that the folded-over upper edge

portion **10**, **11** of the upper planar portion **3** reenforces and increases the rigidity of the strip. The narrow straight edge **10** being the only part of the strip which is exposed provides a suitable support for a surface leveling bar or screed, while at the same time such arrow straight edge provides a center line marker enhancing the appearance of the upper surfaces of the adjoining slabs.

What I claim is:

1. A concrete form of the type used in forming a key contraction joint between adjacent concrete slabs comprising in combination with a plurality of aligned substantially vertical stakes set with their upper ends uniformly below grade level, an elongated sheet metal strip supported on the stakes and having longitudinal upper and lower co-planar portions abutting the stakes and also having a key deformation portion interposed between and connected to the upper and lower planar portions, the upper planar portion having a folded-over portion at the upper edge thereof extending in a direction opposite to the direction of the key deformation portion, such folded-over portion extending downwardly against the upper planar portion to form a narrow longitudinal straight edge extending at grade level, and such bent-over potrion extending outwardly in a direction opposite to the direction of the key deformation portion and thence downwardly to form a longitudinal inverted L-shaped flange positioned well below grade level, said flange embracing and being supported on the upper ends of the stakes.

2. The combination set forth in claim 1, wherein at least two of such strips are arranged in end to end relationship and at least one of the stakes is provided with an elongated head at its upper end, the said head being arranged in bridging relation with respect to the adjacent ends of the flanges of the strips and the said head supporting such adjacent ends of the flanges.

References Cited in the file of this patent

UNITED STATES PATENTS

1,178,700	Baker	Apr. 11, 1916
1,488,638	Heltzel	Apr. 1, 1924
1,814,138	Fischer	July 14, 1931
2,259,382	Ingels	Oct. 14, 1941
2,551,587	Eckman	May 8, 1951
2,574,553	Fink	Nov. 13, 1951
2,848,929	Wilbur	Aug. 26, 1958
3,057,269	Artigalas et al.	Oct. 9, 1962

FOREIGN PATENTS

672,546	France	Sept. 23, 1929