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CONCRETE SLAB KEY-JOINT FORMING MEMBER

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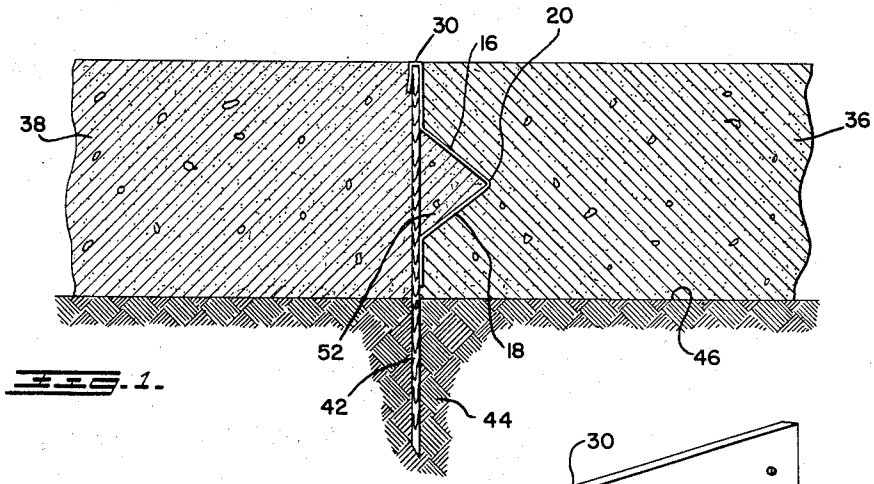


FIG. 1.

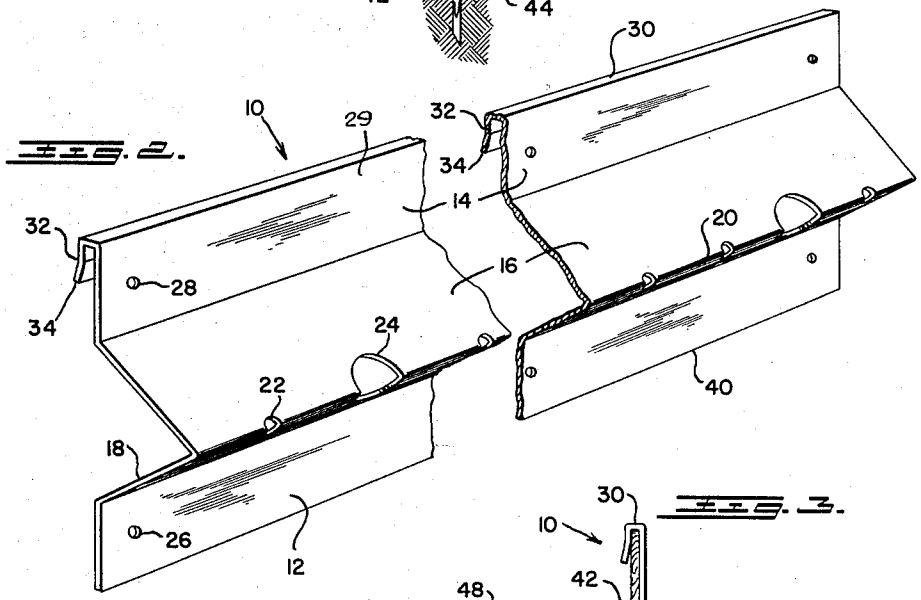


FIG. 2.

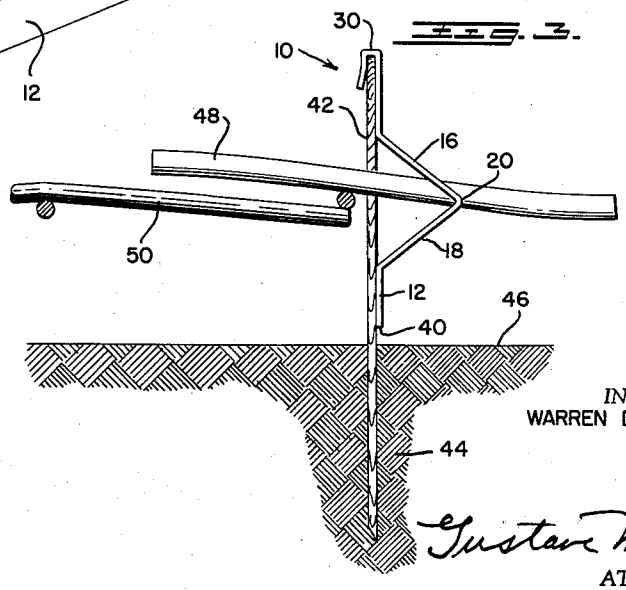


FIG. 3.

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CONCRETE SLAB KEY-JOINT FORMING MEMBER

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6 Claims. (Cl. 94—17)

This invention relates to a concrete slab key joint forming member and has for an object to provide an approved key-joint forming member for use in concrete slab construction such as roadway paving, air field runways, building floors, and elsewhere wherever large slabs of concrete may be poured to form a uniform road, runway or floor surface.

A further object of this invention is to provide an approved concrete slab key-joint forming member which can be fabricated at a minimum expense which may be made of any suitable material, including sheet metal or extruded metal or plastic, wherein the metal may be sheet iron or sheet aluminum or may be extruded aluminum, or any other suitable metal or material.

A further object of this invention is to provide a key-joint forming member for use between adjacent slabs of poured concrete so that the concrete will automatically form a key-joint with the adjacent slab, and wherein a small wire or a large rod dowel may be placed in position through the member of this invention so as to provide a suitable expansion joint between adjacent slabs of concrete.

Still a further object of this invention is to provide a key-joint forming member or concrete slab construction which greatly reduces the cost of concrete slabs, which enables slabs of concrete to be poured simultaneously on both sides of the key-joint forming member of this invention, and at the same time provides a clean permanent cold or contraction straight line joint between adjacent slabs of concrete, thus preventing random cracking in the slab.

Still a further object of this invention is to provide a key-joint forming member which may be placed in operative position very inexpensively by merely hanging it over appropriate positioned stakes whereupon the concrete slab may be poured first on the side of the member which is away from its supporting stake, and may immediately and continuously be poured on the other side of the forming member without waiting for the first slab to harden.

Still a further object of this invention is to provide a key-joint forming member for concrete slabs wherein the forming member has an inverted U or inverted J hook at its upper end which will hang over appropriately positioned stakes driven into the ground and thus be automatically positioned in the proper location ready for the concrete slab to be poured thereagainst and thereafter be poured on the other side thereof leaving the form permanently in position and providing a sharp and definite dividing edge between adjacent slabs.

Still a further object of this invention is to provide an approved key-joint forming member for concrete slabs which if desired may be used in cooperation with wood forms for temporary use and then be stripped away thereafter, but which preferably will be used with metal supporting stakes appropriately located whereupon the forming member of this invention may be quickly and readily positioned thereon at a substantial labor cost over the use of wooden forms, forming a permanent boundary for the slab construction at a substantially lower cost than is provided by old time methods of providing temporary wooden forms or wood supported forms.

Still a further object of this invention is to provide a key-joint forming member for concrete slabs which will form a V notch extending into the side between the upper and lower surfaces of a concrete slab into which V notch the poured concrete of the next adjacent slab will enter and which may be poured without waiting for the first slab to harden.

Formerly large concrete slabs were poured in a checker board formation, making up each individual square of approximately 25 feet with wooden forms, then first pouring the concrete in alternate squares of the checker board which are non-contacting and waiting for such squares to harden, then stripping away the form and then pouring intermediate squares between the previously formed squares. With this invention, it is not necessary to provide the wooden forms at such great expense, instead, as when pouring a 5 in. slab, steel stakes about ⅛ in. thick by 1 in. wide are placed along the boundaries of the proposed squares by being driven into the ground until they extend at the proper height, just 5 inches above the properly prepared ground level. Then, the key-joint forming member of this invention is placed in position by merely suspending the inverted U or J hook integrally formed along its upper edge over the metal stakes, the overall height of a key-joint forming member for a five inch slab being 4½ inches so that the bottom edge is supported ½ inch above the ground level. Wire dowels or splice wires are inserted through appropriately spaced openings through the joint forming member so as to extend over the wire reinforcing grid normally placed in the concrete slab within the square before the concrete is poured. These wire dowels thus serve to substantially tie the wire reinforcing grids of adjacent squares together. If instead an expansion joint is to be formed as in road paving, then larger sized dowels made possibly of iron rods may be inserted through appropriately positioned apertures in the forming member, with one end of the rod greased so that the concrete at that end will not adhere thereto thus permitting expansion and contraction between adjacent squares of the slab, yet maintaining them on the same level.

With the foregoing and other objects in view, as will hereinafter become apparent, this invention comprises the construction, combination and arrangement of parts hereinafter set forth, disclosed, claimed and shown in the accompanying drawings wherein:

Fig. 1 is a section view through adjoining edges of a pair of concrete slab sections with the key-joint forming member of this invention in place therebetween.

Fig. 2 is a perspective view of the key-joint forming member of this invention.

Fig. 3 is an end view of the key-joint forming member of this invention in operative position, ready for the concrete slab to be poured on opposite sides thereof.

There is shown at **10** the concrete slab key-joint forming member of this invention. As shown in Fig. 2, this key-joint forming member may be made of any suitable material, such as sheet metal or sheet material, the sheet material being any suitable material such as plastic or other suitable material having sufficient strength. It may be fabricated by making appropriate folds from a strip of sheet metal or sheet material, or it may be fabricated by extruding it in the finished shape if desired. The member **10** as fabricated comprises a lower plane portion **12** and an upper plane portion **14** integrally secured

together by the two angular intermediate portions **16** and **18** forming a V extending to one side of the plane of the portions **12** and **14**. Inasmuch as these portions **12** and **14** will in operation be placed vertically, these portions will hereinafter be referred to as vertically extending plane portions, portion **12** being the lower vertical portion and portion **14** being the upper vertically extending portion. The angular intermediate portion **18** extends integrally up from the upper edge of the lower vertically extending portion **12**, and similarly the upper angular intermediate portion **16** extends downwardly from the lower edge of the upper vertically extending plane portion **14**, and meets the other angular portion **18** at a V apex **20**.

Either before or after forming the portions into their V apex, two series of suitably spaced apertures **22** and **24** may be formed therethrough. At the same time, a series of suitably spaced apertures **26** is provided in the lower vertically extending plane portion **12** and a similar series of apertures **28** is provided in the upper vertically extending portion **14**. The purpose of these several series of apertures **22**, **24**, **26**, and **28** will become apparent hereinafter.

The upper end of the upper vertically extending portion **29** is folded over at right angles as at **30** extending in a horizontal direction from the vertical portion opposite to the direction of the V apex **20** and forms a sharp right angle with the vertically extending portion **14**. Then a portion **32** is folded downwardly from the portion **30**, the portion **30** extending horizontally in relation to the vertically extending portion **14**, and the downwardly extending portion **32** extends at a sharp right angle to the horizontally extending portion **30**, so that the downwardly extending portion **32** is parallel with the vertically extending portion **14**. Then the extreme end portion **34** of the downwardly extending portion **32** is flared outwardly at a slight degree as shown whereby the portions **30**, **32** and **34** form an inverted U or an inverted J hook relative to the plane of the vertically extending portions.

Obviously, the concrete slab key-joint forming member **10** of this invention will be made in as many suitable sizes as is necessary according to the thickness of the concrete slab with which it is to be used. The dimensions will naturally be proportional to the particular thickness of the slab, but it will now be described for use in connection with a concrete slab **36** and **38** which will be 5 inches in thickness. In such case, the overall height of the fabricated key-joint forming member **10** of this invention will be 4½ inches between the horizontal portion **30** and the lower edge **40** of the lower vertically extending portion **12**. In utilizing this member, a series of preferably flattened stakes, of metal, such as iron, will be placed along a surveyed line defining the edge of the slab **36** to be poured, these stakes **42** being driven into the ground **44** to a suitable depth so that just 5 inches of the stake **42** will extend above the level **46** of the supporting ground **44**. Then, the member **10** will be supported by merely placing its flared inverted U or J hook end over the upper end of the series of aligned stakes **42**, whereupon the horizontal portion **30** will be supported at the exact height corresponding to the thickness of the slab **36** to be poured.

Next, if a key-joint is to be provided between adjacent slabs **36** and **38** to be poured, a series of wire dowels or splice wires **48**, approximately 12 inches in length will be inserted through the spaced apart small apertures **22** in the V apex **20**. As seen in Fig. 3, these dowels **48** will extend over the adjacent wire grid portions **50**. In the particular size of slab above discussed, these wire grids **50** are made usually of No. 10 gauge wire grids and in such case, the wire dowels or splice wires **48** are of No. 9 gauge. The wire grids **50** are supported in the customary manner before the concrete is poured thereover. Inasmuch as the key-joint forming member **10** of this invention is supported on a series of stakes **42** merely by its own weight, without the necessity of tying or fastening the member thereto, the concrete slab **36** on the male or tongue side of the V apex **42** will first be poured thereby of course pressing the member **10** against its supporting stakes **42**. As soon as the slab **36** has been poured, the slab **38** may be poured immediately without waiting for the slab **36** to harden, thereby, of course, enabling a continuous process of pouring concrete to take place. As the concrete slab **38** is poured, it will, of course, flow into the female side of the V apex **20** as at **52**, and, of course, will flow up under the hollow provided by the inverted U or J hook at the upper end of the upper vertically extending portion **14**.

The wire dowel receiving and supporting apertures **22** are about ¼ of an inch spaced apart at 6 inch centers starting at 3 inches from each end of the member **10**.

After the concrete is poured, it may be smoothed or leveled immediately, the levelling rod being moved back and forth over the horizontal surface **30** which in pouring may be temporarily covered with concrete. The rods as conventional will be long enough to extend over the horizontal surfaces **30** at both ends of the slab thereby levelling the slab even with the surface of the horizontal portion **30** and thus providing a clean edge to the concrete when it contracts away therefrom after it has solidified.

If an expansion joint is to be provided, the series of large holes **24** at the V apex **20** is utilized by placing rod dowels therethrough approximately ½ inch or so in diameter, the apertures **24** being approximately ¾ of an inch in diameter so that the rod dowels may extend easily therethrough. As customary, these dowels may be 24 inches in length, one-half thereof being covered with a coating of grease before the concrete is poured thereover. In this manner, the rod dowel is securely fastened in one slab and slidably received in the other slab thereby providing an expansion joint yet maintaining both slabs at the same level in the customary manner.

The apertures **26** and **28** have been provided for use as nail holes, such apertures being ⅛ inch in diameter on a 24 inch center starting from each end of the member **10**. These nail holes are provided for use in the case where the contractor may desire to utilize wooden stakes or wood forms for any reason, in which case the nail holes are already there for nailing the member **10** to the wooden forms for either temporary or permanent use as may be desired.

However, when the member **10** is merely to be used as a form between adjacent slabs, the wire dowels **48** may be used to splice the customary wire grids or mesh together in adjacent slabs **36** and **38**.

There has thus been provided by this invention a key-joint forming member for use in forming adjacent concrete slabs which may be poured successively without delay, without waiting for one slab to harden before the next slab is poured, which forms a key-joint between the slabs with a V apex extending from one slab **38** as at **52** into the adjacent slab **36**. The cost of materials and of labor in utilizing this form as a key-joint forming member between adjacent slabs provides a substantial saving, as much as a labor saving of 90% over utilizing conventional method of wood forms. Although in some cases the form **10** may be stripped away, particularly where the adjacent slab is not poured until the previous slab has hardened, it probably will be less expensive to leave the form in position permanently and pour adjacent slabs continuously without taking time for the first poured slab to harden.

Although this invention has been described in considerable detail, such description is intended as being illustrative rather than limiting, since the invention may be variously embodied, and the scope of the invention is to be determined as claimed.

Having thus set forth and disclosed the nature of this invention, what is claimed is:

1. A combination form and contraction joint for adjacent slab sections of a monolithically poured concrete slab comprising a plurality of expendable flattened stakes set to grade at spaced apart aligned intervals, in combination with an expendable relatively rigid sheet material member comprising a vertically extending plane portion having an inverted J-hook at the top edge thereof, said inverted J-hook consisting of a horizontal portion extending at a right angle from the top edge of said vertical plane portion and terminating in a downwardly extending vertical portion of considerably less height than that of said vertical plane portion, said inverted J-hook snugly embracing and being solely supported at grade level on the upper ends of said flattened stakes with the vertically extending plane portions of said sheet member held in contact with the adjacent vertical portions of said stakes, whereby, when concrete is poured against said sheet material on the side away from said stakes, it will press said sheet material member against said supporting stakes, and concrete may then be poured immediately against the stake supporting side of said sheet material member.

2. The combination joint means of claim 1, at least the bottom portion of said downwardly extending portion of said inverted J-hook flaring outwardly away therefrom.

3. The combination joint means of claim 1, and a deflected key portion extending integrally from said vertically extending plane portion of said sheet material member in the opposite direction from said inverted J-hook.

4. The combination joint means of claim 3, said sheet material member having upper and lower plane portions in the same vertical plane, said deflected key portion extending longitudinally of said sheet material member intermediate said upper and lower plane portions.

5. The combination joint means of claim 4, said deflected key portion having side portions angularly offset from said vertical plane portions of said sheet material member.

6. The combination joint means of claim 5, said deflected key portion being V-shaped.

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