Sept. 17, 1968 R. N. TONE 3,401,612

STAKE FOR CONCRETE FORM

Filed Dec. 14, 1965

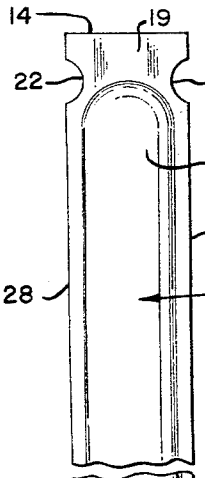


FIG. 3

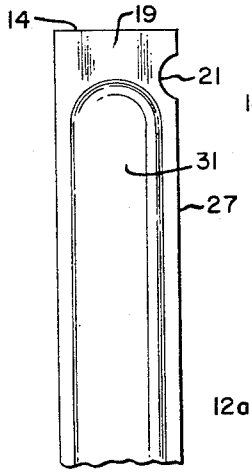


FIG. 4

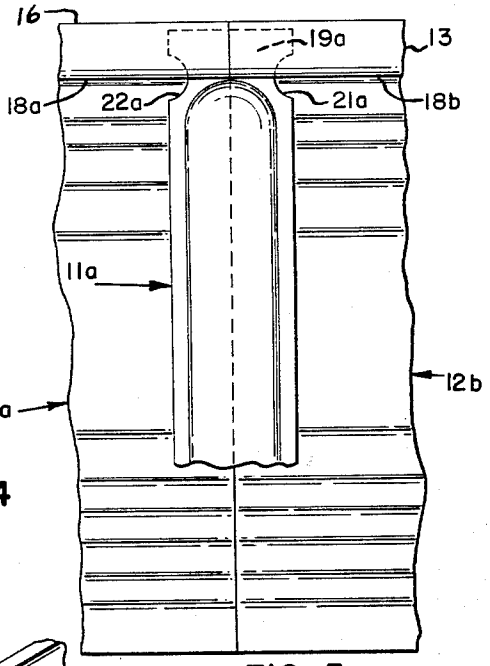


FIG. 5

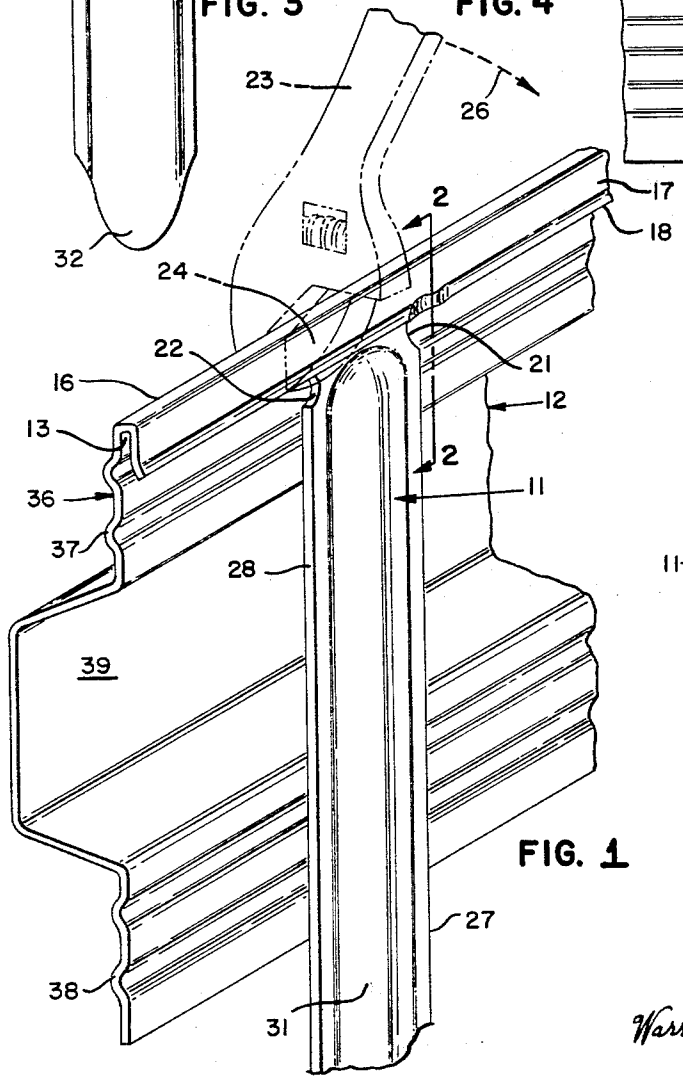


FIG. 1

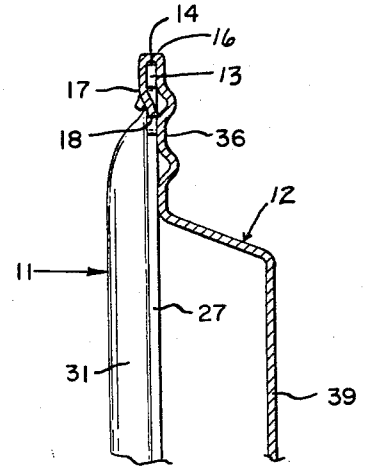


FIG. 2

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3,401,612

Patented Sept. 17, 1968

3,401,612

STAKE FOR CONCRETE FORM

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Filed Dec. 14, 1965, Ser. No. 513,692
1 Claim. (Cl. 94—51)

ABSTRACT OF THE DISCLOSURE

A stake is especially designed for a concrete form member having an inverted top channel for receiving an upper portion of the stake and providing a lower free edge adjacent the upper portion of the stake; the stake being formed at such upper portion with at least one outer edge recess for receiving and interlocking with an inwardly defomed portion of the lower edge of the channel.

The invention relates to expendable sheet metal forms for producing concrete slabs, such as disclosed in Wilbur Patent Re. 24,921, and more particularly to the coordinated structure including the ground stake used for supporting the form at the desired grade level.

The sheet metal form as disclosed in Patent Re. 24,921 is shaped to provide a combination form, screed, and tongue and groove interlock between adjacent sections of the concrete slab. This form has been widely marketed under the trademark Keyed Kold Joint and used in replacing conventional wood construction joint forms for pouring concrete slab sections. One of its advantages is its ease and precision of placement. Ground stakes are driven at spaced intervals along the line of placement of the form member and at predetermined grade elevation. The form member is formed with an inverted top channel dimensioned for slipping over the upper ends of the stakes. Accordingly, after placement of the stakes it is only necessary to register the open bottom of the channel with the upper ends of the stakes and press the form member down on to the stakes until the upper ends of the stakes engage and support the interior top of the channel. Normally, the form member is rather firmly, although frictionally, secured to the upper ends of the stakes which are fitted tightly into the receiving channel. When the stakes are driven into the ground some peening over of the upper ends of the stakes usually takes place. It is also common that the stakes are not set in precise alignment. Under these circumstances the upper ends of the stakes will be wedged tightly into the channel of the form. However, there may be instances where the stakes are driven easily into the ground and do not peen over and where they may be set in rather precise alignment; and in such case the stakes and form are somewhat less tightly engaged. Also there may be instances where the form member will be accidentally lifted relative to the stakes prior to or during the pouring of the concrete. Reinforcing steel or mesh is commonly placed in the concrete slab area and in the placing of this material workmen may engage and force the raising of the form member. Also during the pour, it is common to engage the mesh with a hook or the like and raise it into position near the center of the pour; and this operation may accidentally cause a striking and forced elevation of the form member.

Accordingly, it is an object of the present invention to provide a concrete form and stake of the charatcer described in which the form member after its precise positioning on the stakes may be easily and quickly secured to the stakes in a positive interlock so as to thereafter maintain the carefully established relationship.

Another object of the present invention is to provide a concrete form and stake of the character above which will enable the placement of the stakes at any desired location along the length of the form member so as to readily accommodate reinforcement, chases and the like; in which the aforementioned interlock is effected without the use of any third fastener members such as bolt, screws, etc. and without the use of special tools other than what the mechanic in the field will have readily available to him; and wherein the interlock between the form member and stake is effected without defacing the top wall of the form member or requiring any significant alteration of its profile.

A further object of the present invention is to provide a concrete form and stake of the character described in which a single stake may be used to join in end to end alignment a pair of form members and in which the assembly may be interlocked in alignment and registration to prevent relative movement of the form members one to another or relative to the stake, thus positively maintaining a continuous profile of the exposed top edge of the form members.

The invention possesses other objects and features of advantage, some of which of the foregoing will be set forth in the following description of the preferred form of the invention which is illustrated in the drawing accompanying and forming part of the specification. It is to be understood, however, that variations in the showing made by said drawing and the description may be adapted within the scope of the invention as set forth in the claims.

Referring to said drawing (one sheet):

FIGURE 1 is a perspective view of a concrete form and stake constructed in accordance with the present invention and shown with an applying tool.

FIGURE 2 is a fragmentary cross-sectional view of the concrete form and stake taken substantially on the plane of line 2—2 of FIGURE 1.

FIGURE 3 is a front elevation of the stake.

FIGURE 4 is a fragmentary front elevation of a modified form of the stake.

FIGURE 5 is a fragmentary side elevation of one assembly of the form and stake.

The concrete form and stake of the present invention comprises, briefly, a ground stake **11** and an elongated expendable sheet metal form member **12** having an inverted top channel **13** formed for slipping over the upper end **14** of the stake for support of member **12**, and more particularly the upper edge **16** thereof at predetermined grade level; the channel **13** having a side **17** with a free lower edge **18** traversing an upper portion **19** of the stake; and the stake being formed with at least one edge recess **21** at portion **19** for deforming the free lower edge **18** of the form member into the recess to interlock the form member on the stake.

The indenting of the return flange or fold side **17** of the inverted channel may be conveniently done with any of a variety of tools such as a common crescent wrench **23** depicted in dashed lines in FIGURE 1, it being only necessary to slip jaws of the wrench over the opposed sides of the channel as illustrated with jaw **24** bearing against channel side **17**. Upon subsequent rotation of the wrench as depicted by arrow **26**, jaw **24** will bear against the lower free edge **18** of channel side **17** and deform such edge inwardly toward the opposite side of the channel and into the interlocking recess provided by the stake. If the indenting is done close to the edge of the stake at the recess or notch **21**, some shearing of the skirt may take place which will dispose a sheared edge of the skirt indirect opposition to the edge phase of the recess, thus better locking the form member to the stake. However, this indenting may take place further out from the edge

of the stake and still obtain an effective lock. Pliers may be used in the place of a wrench and the jaws may be of any width since there is no need of indenting the skirt **17** into any particular opening or part of the stake, except that an edge portion of the indented material be disposed within the side recess of the stake.

While the single side recess **21**, as illustrated in FIGURE 4, will suffice for many installations, we prefer to recess or notch both sides **27** and **28** of the stake thus providing a second recess **22**, on side **28**, generally horizontally aligned with recess **21** on side **27**. If the stake cannot for some reason be driven vertically but is set on an angle to the top recess of the form, only one notch (the upper one) may lie within the skirt or flange area. The crimping of the flange into this recess will then suffice. The use of the two recesses also interlocks the stake and form on both sides of the stake, thus preventing relative displacement longitudinally of the form member. This feature is utilized, as depicted in FIGURE 5, where stake **11***a* serves the additional function of positively joining together two lengths **12***a* and **12***b* of concrete form in end to end alignment and with the top edges of the form being held flush and continuous. In such case stake **11***a* is mounted medially between the abutting ends of form members **11***a* and **11***b* so that the upper portion **19***a* of the stake fits into the channels of both recesses thus holding them in registration. The lower free edges **18***a* and **18***b* of the channels are then crimped into the recesses **21***a* and **22***a* so as to positively secure the form members **12***a* and **12***b* to the stake **11***a* in flush coplanar alignment along the top edges of the forms.

As will be observed in the foregoing, the indenting of the lower free edge of the channel into the recesses may be accomplished without deforming or abusing the perfect straightness of the top edge of the concrete form member. Preferably, the recesses **21** and **22** are of substantially arcuate form so as to co-function with the crimping of the free lower edge of the channel into the recess to provide a downward force on the form member thereby causing it to seat upon the upper end of the stake.

Preferably, the stake is fashioned of metal, of sufficient thickness to resist bending during the driving operation, and preferably as a means of increased stiffness the stake is formed over substantially its full length except upper portion **19** with a longitudinal deformation or rib **31** enabling the use of a lighter gauge material and providing a stake which will penetrate difficult ground conditions without bending or buckling. As will be observed from the drawing, this longitudinal rib or deformation **31** is terminated short of the upper portion **19** of the

stake which is fitted into the inverted channel of the form member. Preferably the stake is blanked out of heavy sheet stock so as to provide an upper portion **19** of substantially rectangular cross-section having a thickness or minor dimension fitting within the internal width of the channel of the form member and a width or major dimension between sides **27** and **28** extending longitudinally of the channel. The opposite (lower) end **32** of the stake is preferably pointed or rounded for easier insertion into the ground. The entire stake can be manufactured at low cost by a stamping and forming operation including either one or both of the recesses **21** and **22**.

Form member **12** is fashioned in accordance with the disclosure in United States Patent Re. 24,921 with a main body side **36** having upper and lower coplanar portions **37** and **38** arranged to lie against and be supported by stake **11** and an intervening offset portion **39** which forms a tongue and groove interlock in the confronting faces of adjoining concrete slab sections.

For further description of the construction and operation of this type of combination form, joint and screed reference is made to Patent Re. 24,921.

I claim:

1. A reinforced ground stake and concrete form member having an inverted channel for slipping over the upper end portion of said stake for support of said member at predetermined grade level, said upper end portion of said stake being of substantially rectangular cross section having a minor dimension fitting within the internal width of said channel and a major dimension between opposite sides of said stake extending longitudinally of said channel, said stake being formed with a centrally positioned reinforcing rib extending longitudinally of the stake below said upper end portion and said upper end portion providing a solid central section between the top of said stake and said rib for supporting and transmitting a pounding, driving action applied to the top of said stake, said channel having a side with a free lower edge traversing said upper stake portion, said opposite sides of said stake each being formed with an arcuate edge recess at the level of said free lower edge of said channel side, and said free lower edge having longitudinally spaced portions deformed into said recess to interlock said member on said stake.

References Cited

UNITED STATES PATENTS

3,288,042 11/1966 Gatke ---------- 94—51

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