Jan. 8, 1935. R. W. GOETZ 1,987,589

STAKE BOX

Original Filed Jan. 20, 1932 2 Sheets-Sheet 1

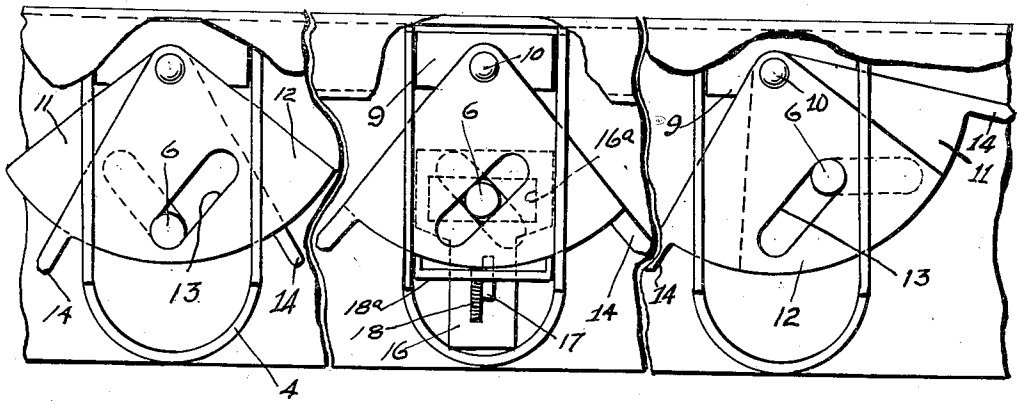


Fig. 1 Fig. 2 Fig. 3

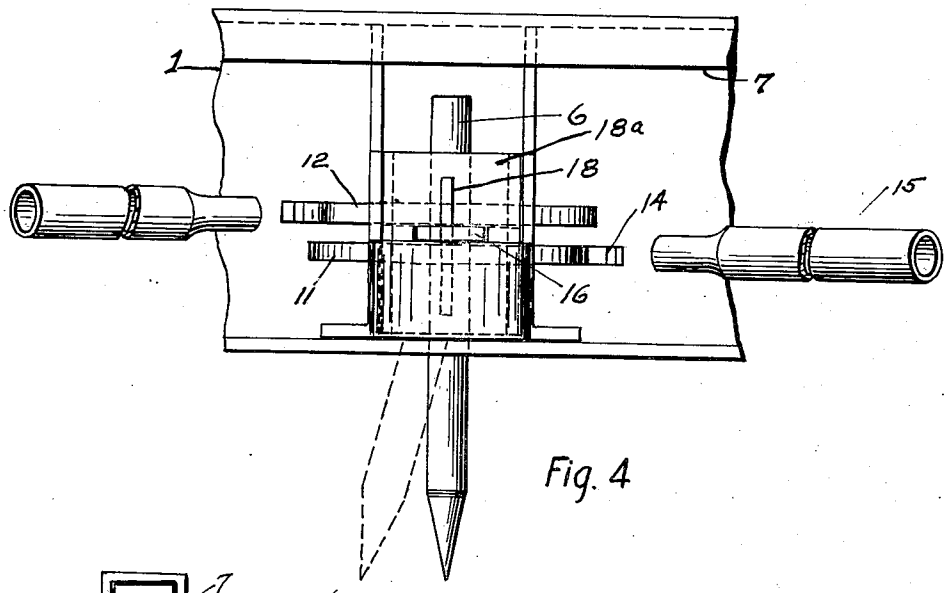


Fig. 4

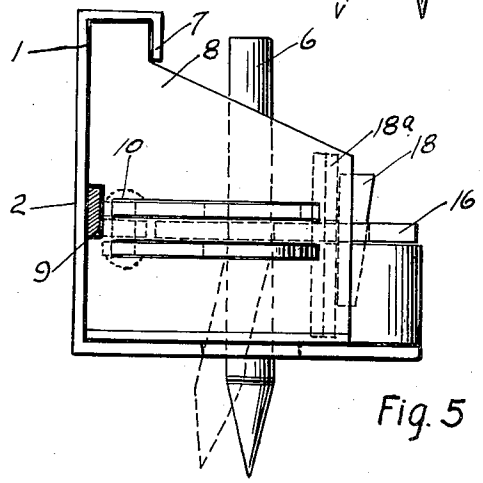


Fig. 5

INVENTOR

Rowland W. Goetz

by William B. Jaspert

Attorney.

Jan. 8, 1935. R. W. GOETZ 1,987,589

STAKE BOX

Original Filed Jan. 20, 1932 2 Sheets-Sheet 2

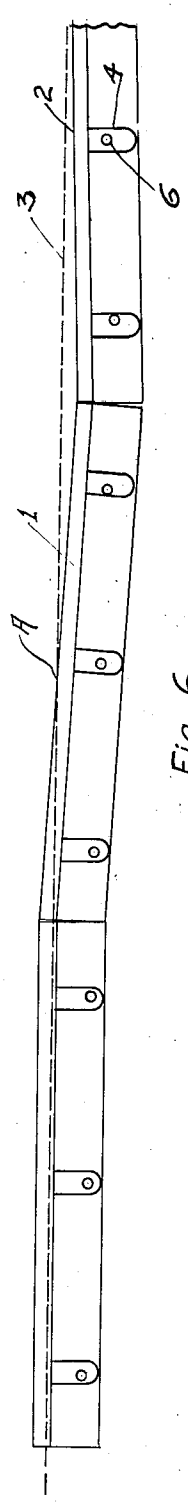


Fig. 6

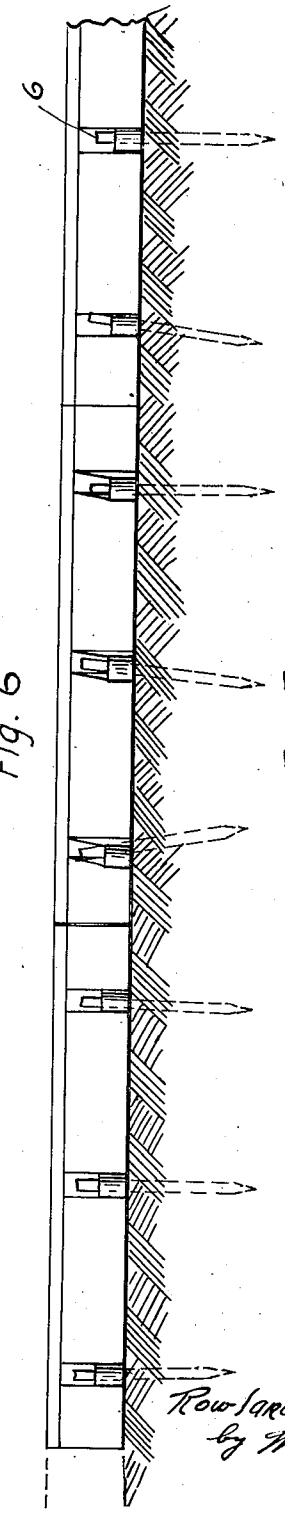


Fig. 7

INVENTOR

Rowland W. Goetz

by William B. Jaspert

attorney.

Patented Jan. 8, 1935 1,987,589

UNITED STATES PATENT OFFICE

1,987,589

STAKE BOX

Rowland W. Goetz, Mount Lebanon, Pa., assignor to Henry F. Teichmann, Washington, Pa.

Application January 20, 1932, Serial No. 587,715
Renewed December 7, 1933

7 Claims. (Cl. 25—118)

This invention relates to concrete forms for road construction and more particularly to improvements in stake boxes in which are secured the anchorage members for holding the forms in place, and it is among the objects of the invention to provide stake boxes for concrete forms embodying adjustable members which shall be adapted to provide for the adjustment of the forms to a line after the stakes are driven.

Another object of the invention is the provision of stake box structures of simple and durable mechanical construction which shall embody positive means for adjusting the forms to which they are attached in a simple and expedient manner.

Still a further object of the invention is the provision of adjustable means for line forms which are self-adjusting in the sense that the adjusting mechanism yields itself to the position or movement of the stake when it is driven into the ground without imposing any strains on the forms to cause distortion.

In setting up forms for concrete road beds or the like, the specifications require that the forms be laid for several hundred feet ahead of the mixing and laying apparatus and these forms must be set up to a line which constitutes the edge of the road bed, there being two sets of forms laid parallel to each other which consist of sections that are laid end to end and anchored in place by means of stakes. The forms, after the concrete is set, are removed and set up in advance of the mixing apparatus.

The forms are steel or wood members which are provided with stake boxes that constitute lugs or brackets having a perforation for receiving a stake which is driven into the ground. When driving the stakes, the forms become distorted due to the stakes striking rocks and otherwise deflecting from a straight line, and in the conventional types of forms as heretofore employed no provision was made for alining the forms after the stakes were driven.

In accordance with the present invention the forms may be set up as hereinbefore explained, the stakes driven in place and then adjustment may be made to bring the face of the forms in absolute alinement with the line to which the forms are set.

The invention will become more apparent from a consideration of the accompanying drawings constituting a part hereof in which like reference characters designate like parts and in which:

Figures 1, 2 and 3 represent top plan views of stake boxes embodying the principles of this invention, showing broken portions of the forms to which they are attached;

Figure 4 a front elevational view of one of the stake boxes showing the stake driven in place and illustrating the adjusting mechanism;

Figure 5 a side elevational view of the stake box shown in Figure 4;

Figure 6 a top plan view of a plurality of sectional forms arranged in end to end relation showing the forms out of alinement before adjustment thereof is made; and

Figure 7 is a side elevational view thereof.

With reference to Figures 6 and 7 of the drawings, 1 designates the form which comprises an angle plate or the like, the side 2 of which comprises the face which must be set to a line, such as the dotted line 3, and in the drawings the form is shown as set to the line at one point only which is designated by the reference character A. 4 designates stake boxes which are integrally formed to the walls of the form or secured thereto as by riveting, welding or the like, and these boxes are provided with means for receiving stakes 6 which are driven through the boxes to anchor the forms after they have been set in place.

In driving the stakes 6, the forms become distorted, as illustrated in Figure 6, and adjustment is made by means of the following mechanism.

With reference to Figures 1 to 5 of the drawings, the stake boxes 4 are shown as securely attached to the forms 1, the upper portions of which are turned down as illustrated at 7, so that the side walls 8 of the stake boxes interact with the depending portions to securely hold them in place. Disposed against the face wall 2 of the form is an angle plate 9 which is fitted in the side walls 8 although they may be secured in any other suitable manner. The angle plates 9 are provided with perforations for receiving a pin or bolt 10 that secures a plurality of radius plates 11 and 12 each of which is provided with a cam slot 13. The radius plates are provided with ears or lugs 14 for receiving the ends of pipe members that constitute levers for manipulating the plates. The stakes 6 are disposed through the cam slots 13 of the radius plates when they are driven into the ground and a slide plate 16 is interposed between the radius plates 11 and 12 and adapted for sliding movement. The plate 16 is provided with a slot 16a to permit movement of the stake and with slots 17 for receiving a wedge 18 which

when driven in place abuts the transverse member 18a to interlock the radius plates with the stake 6.

In operation the forms are set up as shown in Figures 6 and 7 of the drawings, each stake 6 is disposed through a pair of radius plates 11, 12 and the slot of the associated slide plate 16.

If after driving the stakes the forms are out of alinement as shown in Figure 6, the pipe levers 15 are applied to the ears of lugs 14 of the radius plates and the latter are subjected to angular movement whereby the forms are shifted relative to the pivoting point which is the stake 6. By manipulating the radius plates in the manner shown in Figures 1, 2 and 3 of the drawings, various adjustments of the forms may be effected without requiring the removal of the stake 6 as has heretofore been necessary, so that a series of sectional forms can be anchored and alined in a minimum period of time.

The stakes 6 are shown as greatly distorted from their vertical position in Figures 4, 5 and 7 of the drawings, but this is not greatly exaggerated as the stakes very often assume this position when they are deflected by rocks or other obstructions.

The function of the radius plates relative to the stake 6 is on the principle of a lazy tong as is plainly demonstrated in Figures 1, 2 and 3 of the drawings, Figure 2 illustrating the neutral position wherein the radius plates are in their normal alinement with the stake 6. Figure 1 illustrates an extreme position of the radius plates wherein the stake 6 abuts the ends of cam slots 13, and Figure 3 illustrates the other extreme position wherein the stake abuts the opposite ends of the slots.

The foregoing description of the function of the adjustable stake boxes is for extreme cases of misalinement where the stakes are subjected to deflection beyond the limits of the adjusting mechanism. In practice, however, such ordinary deflections of the stakes as take place when they are driven into the ground will cause no distortion of the forms since the radius plates will automatically adjust themselves to the stakes without imposing any forces on the forms. However, by means of the adjustable mechanism of the stake boxes, it will be unnecessary to exercise great care in initially setting the forms as they may be quickly and accurately alined by a few simple adjustments.

By means of the stake boxes and adjusting mechanism herein described, concrete forms may be set with facility and dispatch and can be accurately alined without the laborious manipulations necessary in the employment of conventional forms of stake boxes.

Although one embodiment of the invention has been herein illustrated and described, it will be obvious to those skilled in the art that various modifications may be made in the details of construction without departing from the principles herein set forth, as for example may be required in adapting the adjustable stake boxes for other uses than road beds as herein specified.

I claim as my invention:

1. A form for laying concrete and the like which comprises a facing member having stake boxes each comprising an anchorage member having a pair of movable abutments for receiving a stake and means directly engaging said abutments for locking them against movement.

2. Forms for laying concrete or the like comprising facing members having stake boxes for receiving stakes, said boxes embodying radius plates each of which is provided with a cam slot for receiving a stake, means for mounting said plates to permit relative displacement of the forms and stakes and means for locking said plates.

3. An anchorage device for alining forms or the like comprising in combination a form for laying concrete a plurality of movable plates pivoted to said form by a common fulcrum member, said plates having cam slots for receiving a stake whereby the plates are subjected to movement to prevent displacement of the form when the stake is driven and means for locking said plates.

4. Forms for laying concrete or the like having in combination with a form movable anchorage abutments for receiving stakes, said abutments comprising means swingably mounted on said form, and means for locking said abutments against movement.

5. An anchorage device for alining forms or the like comprising in combination a form for laying concrete a plurality of movable segment shaped plates pivoted to said form in superposed relation, a slide plate disposed between said segment plates, said plates having slotted openings for receiving a stake, and said slide plate having a slot for receiving a wedge, and an abutment for said wedge for locking said plates against movement.

6. In a road form adapted to be secured in place by stakes, means for securing said form to said stakes, which means include a plurality of stake-engaging members, at least one of such members comprising a swingable form-adjusting device movable in opposite directions relatively to another of said members and in service engaging the lateral face of a stake, whereby, the stake being immovable, the position of the form may be adjusted thereby, and means for locking the form to the stake when desired adjustment has been obtained.

7. In a road form adapted to be secured in place by stakes, means for securing said form to said stakes, which means include a plurality of stake-engaging members, at least one of such members comprising an element of a swingable form-adjusting device movable in opposite directions relatively to another of said members and in service engaging the lateral face of a stake, whereby, the stake being immovable, the position of the form may be adjusted thereby, and means for locking said members against such relative movement and effecting rigid engagement with the stake.

ROWLAND W. GOETZ.