

PATENT SPECIFICATION

(11)

1 393 051

1 393 051

- (21) Application No. 31988/73 (22) Filed 5 July 1973
 (31) Convention Application Nos.
 7 228 864 (32) Filed 4 Aug. 1972
 2 317 872 10 April 1973 in
 (33) Germany (DT)
 (44) Complete Specification published 7 May 1975
 (51) INT. CL.² E21D 11/00
 (52) Index at acceptance
 E1E 3



(54) PRESSURE GUIDE FOR USE IN DITCH SUPPORTING ASSEMBLY

(71) I, JOSEF KRINGS of Hans - Böckler-Str. 23 D 5138 Oberbruch, Germany; a citizen of the German Federal Republic, do hereby declare the invention, for which I pray that a patent may be granted to me, and the method by which it is to be performed, to be particularly described in and by the following statement:

10 This invention relates to a guide for a tensioning device or bracing member support, a pair of vertical bracing posts of a ditch shoring assembly, the guide being in the form of a frame which is located at
 15 a terminal end of a tensioning device and mounted on a hinge pin at right angles to the tensioning device.

20 In the past such guides have been guided in vertical slits of supporting posts which face one another and a tensioning device or bracing member has extended between the guides with the tensioning device urging the supporting posts apart and pressing
 25 supporting plates carried thereby against walls of a ditch.

30 It will be readily apparent that during the setting of the bracing unit, the tensioning devices or brace members must be horizontally disposed and care must be taken that the deflection of the brace members with respect to the horizontal should not exceed 5°. Otherwise, there is the possibility that the brace members may become offset at a greater angle and the
 35 entire supporting structure fail.

40 It is an object of this invention, to provide a mounting for a guide which, on the one hand, will substantially prevent deflection of the brace member or tensioning device beyond the maximum 5° angle, and on the other hand, make possible automatic adjustment of the guide during the mounting of the brace member or tensioning device.

45 In accordance with this invention there

is provided a pressure guide for positioning at one end of a tensioning device adapted to extend between a pair of aligned supporting posts of a bracing assembly, said pressure guide comprising frame
 50 means for mounting on a supporting post, a terminal piece for a tensioning device, pivot means for mounting said terminal piece in use at right angles to the supporting post and for limited movement in
 55 a plane normal to said post, and resilient pressure exerting means reacting on said frame and said terminal piece resisting movement of said terminal piece from said
 60 right angle position.

Advantageously, the means for applying the pressure on opposite sides of the terminal piece is in the form of springs.

65 In one preferred form of the invention upper and lower front sides of a frame received within a supporting post have a recess on the edge facing the supporting posts with each recess receiving one end of at least one spring which is guided over
 70 a joint pin of the terminal piece and attached thereto with the leaf spring bridging the pressure guide. If desired, stop pins may also be provided for engaging end portions of the springs to limit the pivoting
 75 of the terminal piece.

The nature of the invention will be more clearly understood by reference to the following detailed description, the appended claims and the several views illustrated in the accompanying drawings: 80

IN THE DRAWINGS:

85 Figure 1 is a fragmentary vertical sectional view taken through a supporting post and pressure guide according to the invention.

90 Figure 2 is a fragmentary elevational view of the supporting posts and pressure guide taken from the right in Figure 1 with portions of the supporting posts being broken away and shown in section.

Figure 3 is a vertical sectional view similar to Figure 1 and shows a modified form of the invention.

Referring now to the drawings in detail, it will be seen that there is illustrated a conventional U-shape or channel supporting post 1 which is part of conventional shoring or bracing to be utilized in supporting the walls of a ditch, for example. It is to be understood that such supporting posts 1 will be spaced longitudinally of the ditch on opposite sides thereof and will be arranged in pairs. The remote faces of the supporting posts will bear against suitable ditch wall supporting members such as heavy timbers or steel plates, and the transversely aligned supporting posts will be urged apart by tensioning devices or bracing (not shown) of the adjustable type. Such tensioning devices or brace members between each pair of supporting posts 1 will be longitudinally spaced in accordance with the depth of the ditch and it is essential that these tensioning devices or brace member be disposed substantially horizontal at all times. It is, therefore, necessary that some means be provided for substantially assuring that the tensioning devices or brace members will be disposed at substantially right angles to the supporting posts 1.

In accordance with this invention, a pressure guide 2 is positioned in each supporting post 1 for the reception of an end of the tensioning device or brace member to be engaged with the supporting posts. The pressure guide 2 includes a generally rectangular frame which, as is best shown in Figure 2, is rectangular in outline and is snugly received between the side walls of the associated supporting posts 1. The rectangular frame includes spaced lateral walls 3 and 4 which are joined together at their upper ends by an upper wall 7 and at their lower ends by a lower wall 8. In the lateral walls 3 and 4, a joint bolt or hinge pin 5 is mounted for rotational movement. To the centre of the joint bolt 5 there is secured a terminal piece 6 which is adapted to be received within the end of a tensioning device or brace member which is to extend generally perpendicular to the supporting posts 1.

It is to be understood that the terminal piece 6 would normally be free to rotate about the axis of the joint bolt 5. However, in order to maintain the terminal piece 6 in a substantially perpendicular relation to the supporting posts 1 at all times, there is provided a pair of compression springs 9 which are of a predetermined tension and which compressively engage opposite portions of the terminal piece 6 adjacent the joint bolt 5. It is to be noted that the compression springs 9 bear against the top wall 7 and the bottom wall 8, res-

pectively. The pre-tensioning of the springs 9 has been selected such that the angular deflection of the terminal piece 6 is limited to a predetermined maximum angle, for example, 5°. At this time it is also to be noted that the inner end of each terminal piece includes a conical portion 10 which is directly secured to the joint bolt 5. The opposed ends of the springs 9 engage against the slightly conical surface of this portion.

It is to be understood that only the simplest forms of pressure applying devices have been illustrated, that is the form of simple compression springs. These springs may be equipped with conventional resetting arrangements if it is so desired. Further, in lieu of the coil compression springs, other types of pressure springs may be utilized, for example, plate springs. Further, hydraulic pressure devices could be equally as well utilized.

Referring now to Figure 3, it will be seen that there is illustrated another embodiment of the invention. The pressure guide 12 includes a rectangular frame of the type illustrated in Figure 1, including spaced lateral walls 13 which are connected together at their upper ends by an upper wall 17 and at their lower ends by a lower wall 18. The rectangular frame is of a size to be snugly received within the channel cross sectional supporting posts 1.

A joint bolt or hinge pin 15 extends between the lateral walls 13 and has reduced end portions 15' which are rotatably journaled therein. A connecting portion 16' is welded to the joint bolt 15 and, in turn, has projecting therefrom a terminal post 16 which is adapted to be received within an end of a tensioning device or brace member in the manner described above.

In lieu of the coil compression springs 9, the pressure guide 12 is provided with a leaf spring 19 having a central portion which is slid over the terminal piece 16 and abuts against the connecting portion 16'. If desired, the leaf spring 19 may be secured to the terminal piece 16 as by welding.

The edge portions of the upper wall 17 and the lower wall 18 opposing the inner surface of the supporting posts 1 are fore-shortened so as to define recesses 11 between the walls 17 and 18 and the adjacent portion of the supporting posts 1. Ends of the leaf spring 19 are received within the recesses 11 and bear directly against the supporting posts 1.

It will be seen that when there is any tendency to displace the terminal piece 16 which requires rotation of the joint bolt 15, the leaf spring 19 will be distorted and will resist such rotational movement. The leaf spring 19 may be designed so as to

provide for a maximum angular displacement of the terminal piece 16.

If desired, a further limitation as to the movement of the terminal piece 16 may be effected by means of a pair of stop bolts or pins 20 which extend through the lateral walls 13 and, if desired, through the adjacent walls of the supporting posts 1. The stop bolts or pins 20 are positioned to engage the leaf spring 19 and affect the torsional characteristics thereof after a limited distortion thereof.

Although only two preferred embodiments of the invention have been specifically illustrated and described herein, it is to be understood that minor variations may be made in the pressure guide without departing from the scope of this invention, as defined by the appended claims.

WHAT I CLAIM IS:—

1. A pressure guide for positioning at one end of a tensioning device adapted to extend between a pair of aligned supporting posts of a bracing assembly, said pressure guide comprising frame means for mounting on a supporting post, a terminal piece for a tensioning device, pivot means for mounting said terminal piece in use at right angles to the supporting post and for limited movement in a plane normal to said post, and resilient pressure exerting means reacting on said frame and said terminal piece resisting movement of said terminal piece from said right angle position.

2. The pressure guide of claim 1 wherein said resilient pressure exerting means are of a predetermined resistance to limit movement of said terminal piece to a predetermined maximum.

3. The pressure guide of claim 1 wherein said resilient pressure exerting means is in the form of a pair of opposed springs.

4. The pressure guide of claim 1 wherein said resilient pressure exerting means is in the form of at least one leaf spring having an intermediate portion secured to said terminal piece and having remote ends retained against movement relative to said general plane.

5. The pressure guide of claim 4 wherein said frame has formed therein recesses for said leaf spring remote ends, and said leaf spring bridging said frame.

6. The pressure guide of claim 5 wherein said frame is seated in a supporting post, and said leaf spring remote ends bear against said supporting post and are restrained thereby.

7. The pressure guide of claim 4 wherein said frame is seated in a supporting post, and said leaf spring remote ends bear against said supporting post and are restrained thereby.

8. The pressure guide of claim 4 wherein stop members are provided adjacent the leaf spring remote ends for engagement by intermediate portions of said leaf springs to limit distortion thereof.

9. A pressure guide for positioning at opposite ends of a tensioning device substantially as described with reference to and as illustrated in the accompanying drawings.

10. A bracing assembly incorporating pressure guide as claimed in any of the preceding claims.

W. REID SHARP & CO.
10, Portland Terrace,
Newcastle upon Tyne
NE2 1QZ



provide for a maximum angular displacement of the terminal piece 16.

If desired, a further limitation as to the movement of the terminal piece 16 may be effected by means of a pair of stop bolts or pins 20 which extend through the lateral walls 13 and, if desired, through the adjacent walls of the supporting posts 1. The stop bolts or pins 20 are positioned to engage the leaf spring 19 and affect the torsional characteristics thereof after a limited distortion thereof.

Although only two preferred embodiments of the invention have been specifically illustrated and described herein, it is to be understood that minor variations may be made in the pressure guide without departing from the scope of this invention, as defined by the appended claims.

WHAT I CLAIM IS:—

1. A pressure guide for positioning at one end of a tensioning device adapted to extend between a pair of aligned supporting posts of a bracing assembly, said pressure guide comprising frame means for mounting on a supporting post, a terminal piece for a tensioning device, pivot means for mounting said terminal piece in use at right angles to the supporting post and for limited movement in a plane normal to said post, and resilient pressure exerting means reacting on said frame and said terminal piece resisting movement of said terminal piece from said right angle position.

2. The pressure guide of claim 1 wherein said resilient pressure exerting means are of a predetermined resistance to limit movement of said terminal piece to a predetermined maximum.

3. The pressure guide of claim 1 wherein said resilient pressure exerting means is in the form of a pair of opposed springs.

4. The pressure guide of claim 1 wherein said resilient pressure exerting means is in the form of at least one leaf spring having an intermediate portion secured to said terminal piece and having remote ends retained against movement relative to said general plane.

5. The pressure guide of claim 4 wherein said frame has formed therein recesses for said leaf spring remote ends, and said leaf spring bridging said frame.

6. The pressure guide of claim 5 wherein said frame is seated in a supporting post, and said leaf spring remote ends bear against said supporting post and are restrained thereby.

7. The pressure guide of claim 4 wherein said frame is seated in a supporting post, and said leaf spring remote ends bear against said supporting post and are restrained thereby.

8. The pressure guide of claim 4 wherein stop members are provided adjacent the leaf spring remote ends for engagement by intermediate portions of said leaf springs to limit distortion thereof.

9. A pressure guide for positioning at opposite ends of a tensioning device substantially as described with reference to and as illustrated in the accompanying drawings.

10. A bracing assembly incorporating pressure guide as claimed in any of the preceding claims.

W. REID SHARP & CO.
10, Portland Terrace,
Newcastle upon Tyne
NE2 1QZ