A telescoping post shore having an outer tube; a plurality of slots disposed longitudinally along the outer tube; an inner tube; at least one tongue member affixed to the inner tube and projecting from the inner tube, the at least one tongue member configured to be received by the plurality of slots; wherein the inner tube and at least one tongue member are dimensioned to slide within the outer tube and the inner tube and at least one tongue member can be rotated within the outer tube to engage the at least one tongue member with at least one of the plurality of slots.
TELESCOPING SHORING POST

FIELD OF THE INVENTION

[0001] The present application relates to a shoring post, in particular to a telescoping shoring post used in systems used for construction.

BACKGROUND TO THE INVENTION

[0002] In typical construction systems, a shoring post is used to help support objects, usually a ceiling or roof. With varying heights of ceilings, it is obviously beneficial to have a shoring post that capable of being quickly adjusted from one height to another, while at the same time ensuring a safe work environment for all workers.

[0003] Truss systems, such as those outlined in U.S. Pat. No. 6,116,567, exist, and involve screw jacks that rotate around the post to adjust the height of the post. While this is fine for small adjustments, if one wishes to extend or retract the post several feet, this could be very time consuming.

[0004] Another type of shoring post, described in Canadian Patent No. 2,249,921, is adjustable and can be used in a system or on their own. These types of shoring posts use a screw, while others of a similar type use a pin-type assembly. While both of these allow for the post to be extended quicker than a screw-jack type, they require the use of small screws and pins, which may not only be difficult to use, but are also easily lost.

[0005] A further prior art post is disclosed in U.S. Pat. No. 5,653,415 to Peri GmbH. The '415 post can be adjusted using pins for quick adjustment to the approximate height, and then a fine adjustment means. The problem with pins is that they can easily be lost and are an extra component that is required when erecting/disassembling the post.

[0006] There remains a need for a telescopic shoring post that can be quickly adjusted from one position to another.

[0007] There also remains a need for a shoring post of simpler design, with significantly fewer pieces involved.

SUMMARY OF THE INVENTION

[0008] The present invention overcomes the deficiencies of the prior art by providing a shoring post, comprising a hollow outer leg, a plurality of slots along the length of the outer leg, an inner leg dimensioned to fit within the outer leg, a tongue plate welded to one end of the inner leg, the tongue plate including a plurality of tongue members, wherein the inner leg may be rotated within the outer leg from a first position where the tongue members are fully within the outer leg, and a second position where the tongue members extend through the slot, locking the inner leg in position relative to the outer leg.

[0009] Additionally, the preferred embodiment of the shoring post includes an adjusting screw assembly, an adjusting handle, and a plurality of support pins, where the screw assembly is used for fine adjustments to the length of the post. There is also a lower outer leg at the opposite end of the screw assembly. Another addition to the preferred embodiment includes a plurality of grooves along the length of the inner leg and the outer leg.

[0010] The present application therefore provides a telescoping post shore comprising: an outer tube, a plurality of slots disposed longitudinally along said outer tube; an inner tube; at least one tongue member affixed to said inner tube and projecting from said inner tube, said at least one tongue member configured to be received by said plurality of slots; wherein said inner tube and at least one tongue member are dimensioned to slide within said outer tube and said inner tube and at least one tongue member can be rotated within said outer tube to engage said at least one tongue member with at least one of said plurality of slots.

[0011] Other aspects and advantages of the device will become apparent from the following Detailed Description and the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0012] The present invention will be better understood with reference to the drawings, in which:

[0013] FIG. 1 is a perspective view of a shoring post according to the present invention;

[0014] FIG. 2 is a side view of a preferred shoring post;

[0015] FIG. 3a is a view of section A-A from FIG. 2, with the tongue in the unlocked position;

[0016] FIG. 3b is a view of section B-B from FIG. 2, with the tongue in the locked position;

[0017] FIG. 4 is a side view of the inner tube;

[0018] FIG. 5a is a view of section C-C from FIG. 4;

[0019] FIG. 5b is a support tongue capable of being fixed to the bottom of the inner tube from FIG. 4;

[0020] FIG. 6 is a side view of the outer tube;

[0021] FIG. 7 is a view of section D-D from FIG. 6;

[0022] FIG. 8 is a view of section E-E from FIG. 7;

[0023] FIG. 9 is a side view of the shoring post with an alternate method of making fine adjustments;

[0024] FIG. 10 is a cross sectional view of an inner an outer tube showing an alternative dimensioning for inner and outer tubes;

[0025] FIG. 11 is a cross sectional view of an inner an outer tube showing a further alternative dimensioning for inner and outer tubes;

[0026] FIG. 12 is a cross sectional view of an inner an outer tube showing yet a further alternative dimensioning for inner and outer tubes; and

[0027] FIG. 13 is a cross sectional view of an inner an outer tube showing an alternative dimensioning for inner and outer tubes without channels.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0028] Reference is now made to the drawings. In the preferred embodiment, each post has an inner tube 12 and an outer tube 14. The inner tube 12 is adapted to extend telescopically from within the outer tube 14, as depicted in FIG. 1. Inner tube 12 can be seen best in FIGS. 4, 5a, and 5b.

[0029] In a preferred embodiment, inner tube 12 has a tongue plate 19 integrally connected to one end. Tongue plate 19 includes a plurality of tongue members 20 located along inner tube 12. As will be appreciated by one skilled in the art, inner tube 12 can have as few as one tongue member or could have numerous tongue members vertically displaced from one another when inner tube 12 is in an supporting position. Further, tongue members 20 are preferably grouped on the same horizontal plain and across from each other in one embodiment. Alternative embodiments could however include tongue members one each side of inner tube 12 at different levels.

[0030] In a preferred embodiment, tongue members 20 are located at a lower end of inner tube 12. However, this is not a
requirement and tongue members 20 could be at various points along the length of inner tube 12.

[0031] Tongue members 20 extend orthogonally from inner tube 12 and are dimensioned to extend through slots 22 in outer tube 14. The tongue members 20 and slots 22 are used to make large adjustments to the post 10 very quickly.

[0032] As can be seen in FIG. 2, in the preferred embodiment, post 10 includes an upper outer tube 16 and a lower tube 14. Outer tube 14 includes a screw bore in its lower portion, and lower tube 16 includes a screw bore in its upper end. Between outer tube 14 and lower tube 16 is a adjusting screw assembly 24. This screw assembly 24 is used to make fine adjustments to the length of the post 10 and includes an adjusting handle 26 and a plurality of support pins 28. The fine adjustment screw assembly 24 has a double track so a single rotation will allow twice the distance, compared to a single track. As will be appreciated, support pins 28 support the screw assembly 24, and the mechanism thereby can be used to finely adjust post 10.

[0033] In the preferred embodiment screw assembly 24 is located at approximately the waist height of a worker to facilitate the fine adjustment of post 10 and to ease the removal of post 10.

[0034] Other methods of fine adjustments may be used in this device, one of which is shown in FIG. 9, where a release type system 34 is used between the outer tube 14 and the lower tube 16. Release type system 34 and other fine adjustment systems are known to those skilled in the art.

[0035] As also seen in FIGS. 1 and 2, the preferred embodiment also includes a post head 18 at the end of the post 10, telescoping from the inner tube 12, used for support. The length that the post head 18 extends from the inner tube 12 and may be adjusted by any of several types of configurations, such as using a screw, or a pin-type configuration. In the embodiments shown in FIG. 2 and in FIG. 9, a spring pin 38 is used.

[0036] The preferred embodiment of the outer tube 14 is shown in FIGS. 6 to 8. As can be seen in FIG. 7, the cross section is approximately rectangular, with an opposite set of outwardly rounded corners 30, and an opposite set of inwardly rounded corners 32. The cross-section of the outer leg 14 is dimensioned so that the entire inner leg 12 and tongue members 20 will fit entirely within the outer leg 14, when the tongue members are located within the outwardly rounded corners 30 (FIG. 3a). This configuration of the outer tube 14 is not essential to the device, however it allows for recesses for the thumb and fingers. In the preferred embodiment shown in FIG. 8 is located an outer hole 44, dimensioned to receive a support pin 28.

[0037] As will be appreciated by those skilled in the art, a rectangular cross section is optional and other cross sections are available. Reference is now made to FIGS. 10 to 12. As seen in FIG. 10, a square cross section can be used where tongue 20 can interact with a groove 22 (not shown in FIG. 10). Other cross sections include a round cross section as seen in FIG. 11 or 12. Various internal configurations for inner tube 12 are shown in FIGS. 11 and 12.

[0038] Alternatively, FIG. 13 shows the outer tube 14 having similar dimensions to the outer tube of FIG. 10. However, in the embodiment of FIG. 13, no channels 42 need to be present. The embodiment of FIG. 2 shows two channels 42, but these are not engaged by tongue 20. In an alternative embodiment, no channels 42 need to be present at all. As will be appreciated, tongue 20 can still engage slots 22 when no channel 42 is present.

[0039] As will further be appreciated by those skilled in the art, the use of slots 22 in channel 42, as in FIG. 10, adds the further benefit of having a larger support area for tongue 20. Specifically, slot 22 includes the wall of channel 42, thereby providing additional support.

[0040] FIG. 10 further illustrates the use of a tongue 20 that is comprised of a slot. This could be advantageous in circumstances such as when the tongue 20 is not at the bottom of inner post 12. However, the tongue plate 19 of FIG. 5b is preferable in most circumstances, since the tongue plate 19 lies under the outer diameter of inner tube 12, thereby providing support to the complete inner post 12.

[0041] The slots 22 in the outer tube 14 (best seen in FIG. 1) are spaced so that when the inner tube 12 may be rotated from having the tongue members 20 entirely within the outer tube 14, to having the tongue members 20 extend through the slots 22 in the outer tube, locking the inner tube 12 in place within the outer tube 14. In the preferred embodiment the tongue members 20 travel along a non-resistant surface, to allow for easier rotation of the inner tube 12 within the outer leg 14. There is also a small downward indentation (not shown) in the slot 22, allowing the tongue members 20 to lock into the indentation due to gravity. The indentation also locks the tongue precisely into the support position. This prevents the accidental rotation when raised into support or when under load. The indentation in a preferred embodiment is located both above and below the groove in order to allow the post to be used upside-down or downside-up. Further, safety holes 41 accommodate a pin to further prevent the dislodging of tongue 20 and hence inner post 12.

[0042] In one embodiment, slots 22 are space every 6 inches or 15 cm to allow for the quick rough adjustment of inner tube 12 within outer tube 14. Other dimensions are also possible.

[0043] As best seen in FIG. 7, tongue members 20 are slid into slots 22 by rotating inner tube 12 through an angle of 45 degrees. Other rotation angles are however possible.

[0044] In the preferred embodiment of the inner tube 12, as shown in FIGS. 4, 5a, and 5b, the leg is of a general cylindrical shape, which allows for it to be easily rotated within the outer leg 14. In this embodiment, the tongue plate 19 is welded to the bottom of the inner tube 12. Other alternatives to welding would be known to those in the art, and any integral connection would be suitable. Also, shown in FIGS. 5a and 5b, the preferred embodiment of the tongue plate includes two tongue members 20, however a different number of tongue members may be used. A connector hole 40 is shown in the embodiment of FIG. 4, near the opposite end of the tongue plate 19 of inner tube 12.

[0045] As can be seen in the embodiment shown in FIG. 3b, support pin 28 fits through the inwardly rounded corners 32 of the outer tube 14. In this embodiment there are also a pair of spring pins 38 through the support pin 28, to lock it in place.
Also shown in the embodiment in FIG. 5b is a pair of safety holes 41 to accommodate pins to further lock the tongue members 20 in place. These safety pins, along with the indentation in the slot 22, are not essential to the device, but are features added to greatly increase the overall safety of the shoring post.

In the preferred embodiment of the shoring post 10, there are a plurality of channels 42 located along the length of both the inner leg 12 and the outer leg 14. A further type of support device in a construction system may be used to engage the channels 42 to add additional support in different directions, or to attach any type of accessories or external bracing using a connector.

As will be seen from FIGS. 1, 3b and 10, when tongue 20 is engaging slot 22, channels 42 of inner post 12 align with channels 42 of outer post 14, thereby allowing accessories or bracing to be added in the same plane to both the inner post 12 and outer post 14. This is advantageous since the channels 42 can now be used along the entire length of post 10. Prior art solutions do not have this capability, and in general do not have channels 42 on inner post 12.

The present post system therefore provides a means for faster removal or replacement for a post by providing a tongue and groove system for gross adjustment of the inner tube within the outer tube. Tongue members are affixed to inner tube 12 thereby allowing the quick removal and replacement of the post without having to find pins or align holes. The preferred shape of the outer tube 14 is configured for easy handling, allowing the worker's thumbs and fingers to grip the post.

In a preferred embodiment post 10 is comprised of aluminum. Other materials could be used however.

These and other advantages of the present system are evident from the above and with reference to the drawings. They are not however meant to limit the invention, the scope of which is defined in the claims below.

18. A telescoping post shore comprising:
   an outer tube;
   a plurality of slots disposed longitudinally along said outer tube;
   an inner tube;
   at least one tongue member rigidly affixed to said inner tube and projecting from said inner tube, said at least one tongue member configured to be received by said plurality of slots;
   wherein said inner tube and said at least one tongue member are dimensioned to slide within said outer tube and said inner tube and said at least one tongue member are rotatable within said outer tube for engagement by said at least one tongue member with at least one of said plurality of slots.

19. The telescoping post shore of claim 18, wherein each of said plurality of slots further includes a groove on a lower side thereof, wherein said at least one tongue member locks into the groove when engaging said at least one of said plurality of slots.

20. The telescoping post shore of claim 18, wherein said at least one tongue member includes a hole therein, said hole adapted to receive a safety pin when said at least one tongue member is engaging said at least one of said plurality of slots thereby locking said at least one tongue member within said at least one of said plurality of slots.

21. The telescoping post shore of claim 17, wherein said outer tube includes a lower portion and an upper portion and a fine adjustment mechanism disposed between said lower portion and upper portion.

22. The telescoping post shore of claim 21, wherein said fine adjustment mechanism includes an adjusting screw assembly and a screw bore in said lower portion and said upper portion.

23. The telescoping post shore of claim 21, wherein said fine adjustment mechanism includes a release type system.

24. The telescoping post shore of claim 18, wherein said plurality of slots are spaced equidistantly along said outer tube.

25. The telescoping post shore of claim 18, wherein said inner tube includes two tongue members affixed to a lower surface of said inner tube.

26. The telescoping post shore of claim 25, wherein said two tongue members are diametrically disposed from one another.

27. The telescoping post shore claim 25, wherein said two tongue members are part of a tongue plate, said tongue plate being affixed to said inner tube.

28. The telescoping post shore of claim 18, wherein said inner tube includes a plurality of tongues disposed longitudinally thereon.

29. The telescoping post shore of claim 18, wherein said inner tube and said outer tube include longitudinal channels therein, said longitudinal grooves adapted to receive a connector.

30. The telescoping post shore of claim 29, wherein said channels in said inner tube align with said channels in said outer tube when said tongue engages said slot.

31. The telescoping post shore of claim 29, wherein the post shore is part of a shoring frame.

32. The telescoping post shore of claim 18, wherein said outer tube includes a cross section with an opposite set of outwardly rounded corners and an opposite set of inwardly rounded corners, said set of outwardly rounded corners adapted to slidably receive said inner tube and at least one tongue member.

33. The telescoping post shore of claim 18, wherein said outer tube includes a round cross section.

34. The telescoping post shore of claim 18, wherein said outer tube includes a square cross section.

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