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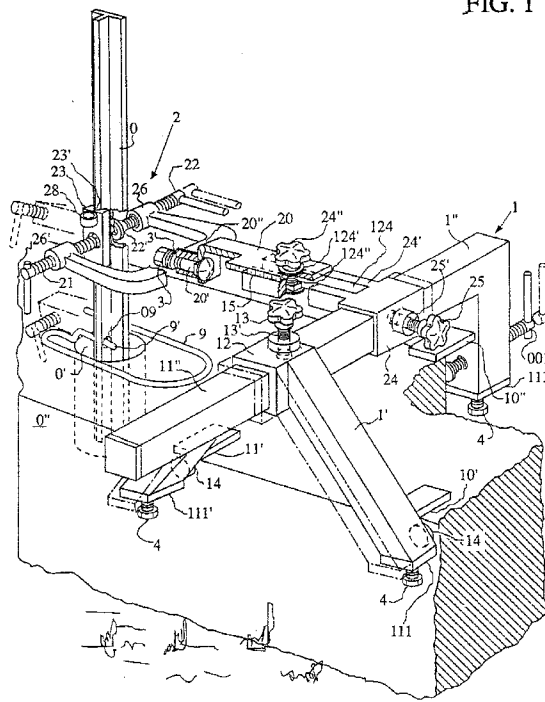
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(54) **Stake setting device for positioning, during mortaring and cement hardening, stakes, posts and the like.**

(57) A stake setting device for positioning, in order to mortar them, stakes, posts and the like, to fit with fencing walls, plinths and the like, comprises a tripodal body (1), having a substantially bridge-like structure, including two shiftably and fixably coupled sections (1', 1''), whereby to provide a bridge, with two legs (111, 111') on one side and one leg (111'') on the other side, wherein on the beam (11'') of the bridge (1), is mounted, in a sticking out condition, shiftably in both orthogonal directions, a horse shoe-like screw clamp (2) which is cardan-like articulated, to receive, in the middle, the stake or post (0) to be set. A loop-like arrangement (9) including a pin (9'), is adapted to engage a conventional bottom hole (09) of each post (0).

FIG. 1



The present invention relates to a device, with a tripodal adjustable body, for positioning and securing, during mortaring and cement hardening, stakes, posts and the like to fit with fencing walls, plinths and the like.

At the present state of the art for positioning and securing, during mortaring and cement hardening, stakes, posts and the like, to fit with fencing walls, plinths and the like, are not known special arrangements to help the operator in doing this job. Thus, the worker doing this job may rely only on his own skillfulness. Such nimble-handed person had to manage with six variables, i.e., three coordinates and three axes, as well as with the casualty of means used, including mortar, stones, wedges and the like, each time to be adapted to a wall and to a receiving hole, which were casual too; thus in turn characterized by six plus six variables. The need to comply with a so large number of variables, suggested, on one side, the provision of holes relatively larger and on the other hand to consider as relative, the present 24 variables, to endeavour to realize an absolute condition, consisting in setting the posts in line, or better by the eye of the worker's assistant, who indicated him, more or less from far away, the correct position, at least of alignment and plumb; this latter however had to be checked from at least two different positions in a kind of perpetual motion. Since the time taken to these two people could not be perpetual, it was limited between 15 and 30 minutes per each post; to perform it, in addition to two people, mortar, trowel, stones of several shapes and dimensions, hammer, level, meter, two alignment-lines and good will to accept the poor results, were needed. Though such poor results could be born in case of securing posts for wire nets and the like, difficulties were encountered in case of securing the posts for railing, balustrades, rigid structures and the like, to be welded thereon afterwards.

The invention, as claimed, is intended to remedy these drawbacks. The inventor, with ingenious perception, has conceived a device with an adjustable tripodal body, for positioning and securing, in order to mortar them, stakes, posts and the like, to fit with fencing walls, plinths and the like, whichever dimensions, within a wide range, the posts and of low walls may have. The adaptableness of this device is substantially general and may be referred to one, more or all the variables or to combinations of them. Thus, among these variables, the most trustworthy can be chosen as reference. Thus, referring to at least one side of the low wall, one mason, even if not very clever, can set, even alone, from four to six posts, in the time taken to two masons, to set a single post, following the conventional way and with much better results, using only a trowel and some mortar, without any risk and always in a condition to repeat again and again or modify each time a single position, substan-

tially, *coeteris paribus*, maintaining the others unchanged. This is possible up to an instant before casting the mortar, unlike before, when the last variable checking impaired the previous settings, due to the physical indeterminacy or uncertainty principle. Such uncertainty is substantially overcome by the creation of a reference centre, in respect of which any measure is taken. In fact, the device in accordance with the present invention is provided with a poly-functional centre, which is also maintained during every adjustment. Moving the device from a stake or post seat to the next, by leaving the preceding stake or post fixed, may be done by casting a small quantity of quick hardening cement mortar, into the receiving hole, so that the final mortaring can be done in sequence, at the end, for all stakes. The tripodal structure is substantially in the form of a bridge, including two shiftably coupled sections, wherein the bridge comprises two rests on one side and one rest on the other side; the rests provide three angles, with counterpoised concavities, whereby the device can be fit, with a single clamping screw, to the low wall. In accordance with a preferred embodiment of the present invention, the two-legged section is in turn in the form of "V" shaped bridge and is provided with a polygonal, tubular coupling member, provided with a fastening screwed knob, to receive therein the beam extension of the bridge section, with a single leg or rest, substantially in the form of a square. On the beam, with a coupling similar to that between the bridge sections, is mounted a cardan-like articulated screw clamp, in a sticking out condition, shiftable in both orthogonal directions, being swingable around a pivot attached to a plate. Such pivot is in the form of a bolt, having a screwed rod end, on whose stem, the screw clamp is slightly fixed with spring action, by a nut and by discoidal springs. This screw clamp has a "C" or horse shoe-like shape and the fastening of stakes or posts, generally having "T" cross-section, is provided by a clamping screw, installed coaxially to a jaw, which latter may be positioned or set by a screw integral therewith; this setting is made once in a while, by turning the jaw and/or the screw in clockwise or anticlockwise direction by steps of 180°, e.g. when stakes or post of different cross-section are to be positioned. The coaxial screws, of the jaw and of the screw clamp, are antagonist in receiving therein, about in the middle, the stake or post to be set, and are provided at the ends of the articulated screw clamp, whereby to provide to the stake or post, the second articulation axis. The screw clamp is integral with the jaw which has a receptive prism, while the antagonist clamping screw is normally provided with a resting disc or presser which engages the main surface of the post compelling it in strictly normal position. The prism is further provided with a level, adapted to provide monitoring all over 360°, e.g. of the spherical known kind, In accordance with a preferred embodiment of the present

invention, the legs and or rests of the tripodal structure are optionally provided with bottom ends in the form of bayonet or spade, adapted to be driven into the ground, in close vicinity to a plinth, which, of course, includes a hole wherein to mortar the stake or post. Such bottom ends are removable, however they may be left mounted, even if not in operation. Moreover, a loop-like flat arrangement including a pin, is adapted to engage a conventional bottom hole of each post, in order to place all the posts with such holes parallel to the wall top.

One way of carrying out the invention is described in detail below, with reference to the drawings, which illustrate a specific embodiments, in which:

Figure 1 is a perspective view of a device, in accordance with the present invention, with an adjustable tripodal body, for positioning and securing, during mortaring and cement hardening, a "T"-like cross-sectioned post, which device is shown in use on a low wall. Several breaking were provided at different levels, to show the details otherwise hidden. Whereas, in phantom lines, are shown some movable components or portion thereof, in alternative positions.

Figure 2 is substantially a repetition of figure 1, but referred to a device in use on a land including flush a plinth provided with a hole for receiving therein a tubular stake or post.

With reference to the figures of the drawings, in accordance with the present invention, a tripodal structure 1, including three legs 111, 111', 111'', is substantially in the form of a bridge and substantially including two shiftably connected sections 1', 1'' coupled, to provide indeed a bridge 1, with two legs 111, 111' and two rests 10'; 11', on one side and one leg 111'' with rest 10'' on the other side. In each of the corners provided by the legs 111, 111' and by inherent rests 10', 11' a resting pad 14, engaging the vertical side of the low wall 0'' is included. Moreover, each base wall of legs 111, 111', 111'' is provided with a screwed hole (not shown) receiving, screwed therein, a screw 4, of which it will be spoken later on.

In accordance with a preferred embodiment of the present invention, the legs 111, 111', provide in turn a "V" shaped bridge, which comprises a polygonal coupling member 12, which is tubular and provided with a knob screw 13, 13', to fixedly receive the beam portion 11'' of the single leg section 1'', which is substantially in the form of a square; at the bottom thereof there is a clamping screw 001 operable horizontally, substantially cooperating with the antagonist legs 111, 111', i.e. with the resting pads 14. On the beam 11'', with a coupling similar to that between the bridge sections 1', 1'', in sticking out attitude, shiftably in both orthogonal directions, is mounted a screw clamp 2. More precisely on the beam 11'' is provided a polygonal tubular coupling member 24, including a knob 25, with a fastening screwed stem 25' for fixing the same to the beam 11''. The coupling member 24 is

provided with a horizontal projecting fork bracket 24', in whose groove 124 is shiftably mounted a screw 124'', provided with a washer 124' and a knob 24''. It cooperates with a plate 20, carrying the cardan-like, articulated, horse-shoe-like, screw clamp 2, to receive, about in the middle, the stake or post 0, to be set into the hole 0', of the low wall 0'' (figure 1) or of the plinth 01 (figure 2). More precisely, the screw clamp 2 is cardan-like articulated, being swingable around the pivot 20' of the plate 20, having a screwed rod end 20'', on which it is slightly fixed with spring action, by the nut 3 and by the discoidal springs 3'. Moreover, the screw clamp 2 has a "C" or horse shoe-like shape. Fastening of the stake or post 0, having a "T" (figure 1) or tubular (figure 2) cross-section, takes place by the clamping screw 22, mounted coaxially to the jaw 23. Jaw 23 is integral with the screw 21 and may be positioned thereby by turning the unit, by half turn each time, in clockwise or anticlockwise direction; this setting being made once in a while e.g. when changing the post 0 cross-section. The screws 21 and 22 are coaxial and are provided at the ends 26, 26', of the articulated screw clamp 2, whereby to provide, to the same stake or post, the second articulation axis. The clamping screw 21 is integral with the jaw 23, which has a receptive prism 23', while the clamping screw 22 is normally provided with a resting disc 22', which provides a a guiding wall for the main surface of the post 0 maintaining it strictly orthogonal. Prism 23' is further provided with a level 28, adapted to provide monitoring all over 360°, e.g. of the spherical known kind. In accordance with a preferred embodiment of the present invention, the legs 111, 111', 111'' of the tripodal structure 1, may be provided by the screws 4, with bottom ends 010', 010'', 011', in the form of bayonet or spade, adapted to be driven into the ground 00 in close vicinity to a plinth 01, which, of course, includes a hole 0', wherein to mortar the stake or post 0.

From what previously described the operation of the device should be self explaining, however a short explanation thereof will be given hereafter. Posts 0 having "T" cross-section (figure 1) or tubular (figure 2), are wanted to be secured within the holes 0' of the low wall 0''. The device, substantially as shown in figure 1, is applied on top of low wall 0'', in close vicinity of hole 0', (the other ones are not shown). To do this the clamping screws 13, 25, 24'', are all released, in order that the device may be suited to the low wall 0'', with the concavities of the angles 111-10', 111'-10'', 111''-11' engaging the two corners of the same low wall and with the clamping screw 001 retracted. At this stage the clamping screw 001 is tightened, then the unit 24, 20, 2, and connected means, are situated substantially perpendicularly to the hole 0', without tightening the clamping screw 25. Then the stake or post 0 is placed at the centre of unit 2 and after adjusting, once in a while, the position of the jaw 23 to

adapt it to the cross section of the post, the clamping screw 22 is tightened on the stake or post 0, endeavouring to keep the stake or post as vertical as possible, with the help of the guiding wall of resting disc 22' for the main surface of the post 0, making reference to level 28. A centring of the stake or post 0 on the hole 0', is then provided, not caring at all of the same hole but devoting the utmost care to the coordinates of the low wall, possibly making reference to the scale 15, as well as to the distance of the next stake or post and/or the extension of the stake or post, or of its hole from the top of the low wall, managing each time on the couplings 24 - 1"; 20 - 24' and tightening, each time, the inherent knobs 25, 24". At this stage the plumb line is checked again, having reference to the level 28; this can be made very easily by handling the stake or post 0 as it where a cloche. When the posts 0 to be secured are a series, the one just set is fixed rapidly in place, by a little of mortar, made of fast hardening cement, not shown; which requires, for a sufficient hardening, only one minute. The final mortaring with filling of the hole 0' with usual mortar, will take place when all the posts 0 are in position duly secured with such provisional cement mortar. Otherwise, while expecting the the hardening of provisional cement of the present post, the previous post hole is definitely filled with normal hardening mortar. For moving the device to the next stake or post hole (not shown) the knobs 001 and 22 are released and the device is set there. If the low wall 0" is regular and horizontal or maintains a constant inclination or trend, the second and following posts 0 may be secured even maintaining the device setting, simply controlling the knobs 22 and 001 and possibly the scale 15. Whereas, if the low wall 0" is heterogeneous it is necessary to repeat, totally or in part the aforesaid setting. If in turn the posts are to be set into the holes 0' of plinths 01 buried into the ground, not having as a reference a low wall, it is necessary, to set each time the device, after having driven the bayonets or spades 011', 010', 010" into the ground. In both cases may be used a loop-like arrangement 9 including a pin 9', according the present invention, which is adapted to engage a conventional bottom hole 09 of which all stakes or posts are generally provided in order to place all the posts 0 with such holes 09 parallel to the wall top 0'.

## Claims

1. Stake setting device for positioning, in order to mortar them, stakes, posts and the like to fit with fencing walls, plinths and the like, characterized in that it comprises a tripodal body (1), having a substantially bridge-like structure and substantially including two sections (1', 1'') shiftably and fixably coupled, whereby to provide the bridge, with two legs (111, 111') on one side and one leg

(111'') on the other side, wherein on the beam (11'') of the bridge (1) is mounted, in a sticking out condition, shiftable in both ortogonal directions, a horse shoe-like screw clamp (2) which is cardan-like articulated, to receive, in the middle, the stake or post (0), to be set, and wherein a loop-like arrangement (9) includes a pin (9'), adapted to engage a conventional bottom hole (09) of each post (0).

2. Device, as claimed in claim 1, characterized in that the pair of legs (111, 111'), arranged in a "V"-like bridge disposition, is provided with a polygonal, tubular coupling member (12), provided with a fastening screwed knob (13, 13'), or clamping screw, to receive therein the beam (11'') of the single-leg bridge portion (1''), which is substantially in the form of a square, wherein at the bottom thereof there is a clamping screw (001), operable horizontally, substantially cooperating with the antagonist legs (111, 111') or with the resting pads 14.
3. Device, as claimed in claim 1, characterized in that the horse shoe-like screw clamp (2) which is mounted, in a sticking out condition, to be shiftable in both ortogonal directions, on the beam (11''), includes a polygonal tubular coupling member (24) having a fastening screwed knob (25), or clamping screw, provided with a horizontal projecting fork bracket (24'), in whose groove (124) is shiftablely mounted a screw (124'') provided with a washer (124') and a knob (24''), cooperating with a plate (20) fastened to the cardan-like, articulated, horse-shoe-like, screw clamp (2), to receive about in the middle, the stake or post (0) to be set into the hole (0') of the low wall (0'') or plinth (01).
4. Device, as claimed in claim 1, characterized in that the horse shoe-like screw clamp (2) is cardan-like articulated, being swingable around the pivot (20') of the plate (20), having a screwed rod end (20''), on which it is slightly fixed with spring action, by the nut (3) and by the discoidal springs (3').
5. Device, as claimed in claim 1, characterized in that the screw clamp (2) has a "C" or horse shoe-like shape and fastening of stakes or posts (0), generally having "T" cross-section, results by a clamping screw (22), installed coaxially to the jaw (23).
6. Device, as claimed in claim 1, characterized in that the jaw (23) is integral with the screw (21) and may be positioned thereby by turning the unit by half turn each time in clockwise or anticlock-

wise direction, such setting being necessary once in a while e.g. when changing the post cross-section.

7. Device, as claimed in claim 1, characterized in that the screws (21 and 22) are coaxial and are provided at the ends (26, 26'), of the articulated horse shoe-like screw clamp (2), whereby to provide the stake or post being set with the second articulation axis. 5  
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8. Device, as claimed in claim 1, characterized in that the clamping screw (21) is integral with the jaw (23) which has a receptive prism (23'), while the clamping screw (22) is provided with an idle resting disc (22') providing a strictly orthogonal guiding wall for the main surface of the post (0). 15
9. Device, as claimed in claim 8, characterized in that the prism (23') is provided with a level (28), adapted to display plumb line indications all over 360°, e.g. of the spherical known kind. 20
10. Device, as claimed in claim 1, characterized in that the tripodal legs (111, 111', 111'') of the structure (1) are optionally provided with bottom ends (010', 010'', 011') in the form of bayonet or spade, adapted to be driven into the ground (00) in close vicinity of a plinth (01) including a hole (0') wherein to mortar the stake or post (0). 25  
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FIG. 1

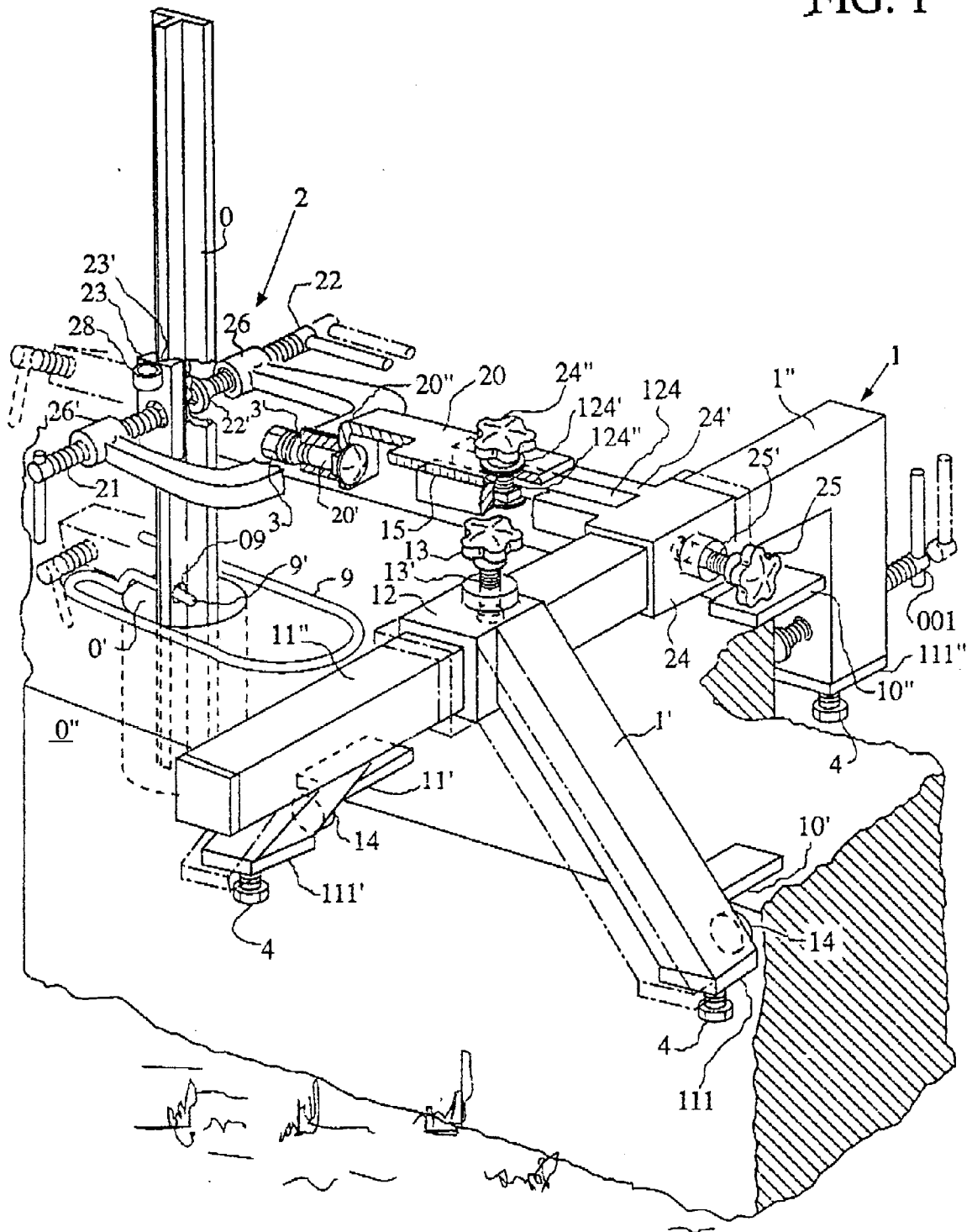


FIG. 2

