

FENCE PANEL SUPPORT FOOT

FIELD OF THE INVENTION

The present invention relates to fence panel support feet for supporting
5 fence panels used in temporarily fencing off building sites, fencing in the
perimeter of building floors during construction of a building, restricting access to
and from open spaces, and the like.

BACKGROUND TO THE INVENTION

Temporary fences find use in varied applications where an open space is
10 to be fenced off or fenced in, or access to and from restricted or unsafe areas is
to be prevented. In the building industry, it is known to erect temporary fences
around the perimeter of a building site under construction, and also around the
perimeter of floors of a multi-story building during construction in order to protect
workers and objects from falling to the ground below, thereby averting dangerous
15 and hazardous situations.

Fencing systems which include individual fence panels and separate
support feet devised to removably mount therein upright poles of the fence panels
are known. The support feet typically take the form of box-like footing blocks and
are typically made from plastic, concrete, or rubber composite, with sufficient
20 weight to support a fencing panel in an upright position and prevent, under
specified loads, the fence from toppling over and being displaced.

Known footing blocks typically include one or two holes that provide
receptacles for insertion of upright side/end poles of fence panels, whereby one
footing block provides support for two adjoining panels extending in opposite
25 directions from the support foot in one longitudinal direction, or at an angle to one
another. The holes are typically located about midway of the longitudinal
extension of the block.

Fencing systems using such footing blocks are much less time consuming
and more cost effective to install, as no bolting or clamping of the fence panel
30 support to the ground is required. Footing blocks can also be easily deployed on
uneven surfaces.

One drawback of such systems is, however, that on a smooth surface such
as on concrete building floors or slabs, conventional footing blocks tend to be

relatively easily displaced, for example when a worker leans against the block or supported panel portion, even when they are sufficiently weighted down.

Another drawback of known fencing systems employed in temporarily fencing in or fencing off an area is that each footing block is devised to only support two adjoining panels per block. Consequently, fence junction points where more than two fence junctions converge will require the arrangement of multiple footing blocks in close proximity which, because of the substantial external dimensions of the blocks, will mean that gaps will be present between adjoining fence sections at such junction.

It is therefore desirable to provide an improved support foot for a temporary fencing panel which substantially ameliorates some of the above limitations or disadvantages.

SUMMARY OF THE INVENTION

In a first aspect, the present invention provides a fencing panel support foot arranged for supporting fencing panels in an upright-erected manner on a floor surface, the support foot including: a footing block of sufficient weight and dimensions such as to prevent toppling-over of an upright fencing panel when mounted to the footing block and when the panel is subjected to predetermined forces normal to the panel's expanse; and three or more mounting receptacles each adapted to receive an upright mounting pole of a fencing panel to be supported at the footing block; wherein the mounting receptacles are arranged in one or more clusters at the footing block, each cluster having at least three said mounting receptacles situated in such close proximity that the upright mounting poles of the fencing panels received therein maintain a predetermined gap between them and provide a common anchoring location for three or more fencing panels in close proximity to each other.

Preferably, as is known in the art the support foot is of a box-like rectangular configuration, but in accordance with a preferred form of the invention, it will include three said clusters of receptacles at said footing block, one said cluster arranged near each terminal end of the footing block and one said cluster centrally located between the terminal ends of the footing block. More preferably, each said cluster includes at least four said mounting receptacles.

Support feet in accordance with the invention provide a single location for supporting a plurality of fencing panels at one and the same foot, further allowing the panels to extend in various orientations, whilst providing that only a gap of predetermined small size is present between the adjoining, supported fencing panels. The specific size of the gap will depend upon the intended use and application or purpose of the fencing system which uses the footing blocks in accordance with the invention. For example, the mounting receptacles may be spaced very close together such that the gap will be small enough to prevent insertion of a hand between neighbouring fencing panels, when in use this provides an almost gap-free assembly of adjoining panels.

In one form, the footing block includes three elongate steel plate members in parallel separation and which receive between facing sides thereof a plurality of steel tubes that form the mounting receptacles. The steel plate members may be welded to the steel tubes. A footing block formed of steel provides sufficient weight and strength for supporting most known fencing panel types. Use of a steel tube to provide the fence panel mount at the footing block minimises wear and tear of the footing block mount caused by the repeated insertion and removal of the upright poles of the fence panels. Also, tubular inserts formed of steel provide tighter, more accurate, receptacles for fence panel posts as commonly present in many types of temporary fencing panels.

In a second aspect, the present invention provides that the fencing panel support foot of the first aspect has a plurality of ground engaging bodies disposed for supporting the footing block on a surface, and made of or including a material defining or providing a high coefficient of friction as regards concrete building floor surfaces such as to counter slippage of the footing block when subjected to predetermined operational loads.

Preferably, the ground engaging bodies comprise cylindrical heel supports formed of a rubber material having sufficient compression strength to react the weight of the footing block without substantial deformation, and equally ensure that the coefficient of friction value between the material of the ground engaging bodies and a concrete building floor surface is set at a suitable level, for example not greater than 0,4.

Illustrative embodiments of the present invention will now be described with reference to the accompanying figures. Further features and advantages of the invention will also become apparent from the following description.

BRIEF DESCRIPTION OF THE DRAWINGS

5 Figure 1 shows a line of fence panels mounted in support feet arranged around the perimeter of a building floor;

 Figure 2 is a perspective view of a support foot according to one embodiment of the present invention, shown from above;

 Figure 3 is a perspective view of the support foot of Figure 2, shown from
10 the underside;

 Figure 4 is a plan view of the support foot of Figure 2;

 Figure 5 is a side elevation of the support foot of Figure 2;

 Figure 6 is an end elevation of the support foot of Figure 2;

 Figure 7 is a perspective view of a support foot according to a second
15 embodiment of the present invention, shown from above;

 Figure 8 is a perspective view of the support foot of Figure 7, shown from the underside;

 Figure 9 is a plan view of the support foot of Figure 7;

 Figure 10 is a side elevation of the support foot of Figure 7;

20 Figure 11 is an end elevation of the support foot of Figure 7;

 Figure 12 is a plan view of the support foot of Figure 7 with fencing panels inserted in accordance with one arrangement;

 Figure 13 is a plan view of the support foot of Figure 7 with fencing panels inserted in accordance with a second arrangement;

25 Figure 14 is a plan view of the support foot of Figure 7 with fencing panels inserted in accordance with a third arrangement;

 Figure 15 is a plan view of the support foot of Figure 7 with fencing panels inserted in accordance with a fourth arrangement.

DESCRIPTION OF PREFERRED EMBODIMENT

30 Figure 1 shows a line of fence panels 100 mounted in support feet 10 arranged around the perimeter of a building floor 200, illustrating one possible use of the support feet 10 described below. The fence panels 100 are arranged around the perimeter of the floor during construction in order to protect workers

and objects from falling to the ground below, thereby averting dangerous and hazardous situations.

Figures 2 to 6 show one embodiment of a support foot 10 consisting of a footing block 12 and eight ground engaging bodies or heel supports 14.

5 The footing block 12 is formed of steel components, and comprises three rectangular steel plate members 16 in a substantially parallel spaced apart arrangement extending vertically with respect to a reference plane (eg floor surface). A total of six identical mounting receptacle tubes 18, also formed of steel, whose respective vertically extending axes are disposed substantially
10 parallel to one another, are welded two-by-two between facing sides of the plates 16. The tubes 18 serve as mounts for insertion of mounting members, for example support poles, of a fence panel (not shown). Respective transverse steel bars 19 located at the terminal opposite ends of the stack of plates 16 are welded to an upper edge of each end of the plates 16 to thereby increase overall stiffness
15 of the welded assembly, while also functioning as a handle for carrying the support foot 10 to a location where the foot 10 is to be deployed to provide a common anchoring location for at least two fence panels.

 The dimensions of the footing block 12, and in particular the plates 16, will be chosen to meet requirements of use, for example the weight and dimensions
20 of the fence panels to be supported, expected operational loads, etc. Preferably, however, each plate 16 will be about 740mm in length, 100mm in width, and between 6mm to 8mm in thickness.

 As best seen in Figure 3, the tubes 18 extend below the depth (ie lower longitudinal edge) of the panels 16, although not to an extent of the height of the
25 heel supports 14. The diameter of the tubes 18 should be sufficient to allow support poles to fit snugly inside. Preferably, this will be between 25mm to 40mm, most preferably 33.7mm outside diameter (or 25 nominal bore). The height of each tube 18 is about 110-120mm (ie somewhat larger than the width of each plate 16, and sufficient to provide an adequate mount for a support pole).

30 Six rectangular steel supports 22 lie transverse to the longitudinal extension of plates 16 and are welded to the lower edges of the plates 16 so that two supports 22 are located on either side of a pair of said tubes 18. The supports 22 provide respective support platforms for mounting the heel supports

14 to the footing block 12, and to again assist in stiffening the entire footing structure 12. As noted, horizontal supports 22 are welded to the vertical plates 16, although other attachment mechanisms may be used, eg mounting angles, etc. Assuming the dimensions of the footing block 12 and tubes 18 are approximately
5 as set out previously, the steel supports 22 will preferably be about 50mm in width, 100mm in length and 10mm in thickness.

Eight heel supports 14 are shown, with four heel supports 14 positioned towards each end of the footing block 12 along its base. The heel supports 14 may be arranged in other locations, however, as the footing block 12 is to sit
10 substantially horizontal on the ground, the heel supports 14 should be evenly spaced along the base. In other embodiments, an additional four heel supports 14 may also be located centrally, ie surrounding the centrally located tubular inserts 18.

Each heel support 14 is a cylindrically-shaped solid rubber body defining or
15 providing a high coefficient of friction as regards concrete building floor surfaces, such as black natural rubber with a durometer hardness of 50-55. Preferably, the heel supports 14 include a ground engaging lower surface that is roughened thereby to provide non-slip ground engagement members 16 for the support foot
10. Other suitable non-slip materials could also be used. Each heel support 14 is
20 preferably about 15mm in height and 40mm in diameter, although the exact sizing is dependent on the conditions and weight of the structure.

Alternatively, cylindrical steel stumps could be used for the heel supports 14, with a black natural rubber (or other non-slip material) terminal plate providing the non-slip engagement component of the footing block 12.

25 In other forms, the ground engaging surface material may comprise a plate made of rubber (eg black natural rubber) or other non-slip material, either being solid and substantially planar, or include formed heels in the plate. The plate may be located at each end of the support foot or alternatively cover the entire ground engaging area.

30 As best shown in Figures 4, 5 and 6, the heel supports 14 are attached to the steel supports 22 by bolts 24 and corresponding nuts 25. The bolt head is moulded or countersunk into the rubber heel support 14 during manufacture,

although other ways of securing the heel supports 14 to the supports 22 could be employed, eg using adhesives.

Having the individual heel supports 14 attached in a replaceable manner, such as via the bolts 24, to the footing block 12 allows the heel supports 14 to be replaced if required, especially in light of the rough treatment which the support foot 10 may be subjected to during use.

As noted, to counter slippage of the support foot 10 when deployed on a concrete floor, the friction coefficient values between the concrete floor and the support foot 10 will need to be determined with respect to operational loads the fence will be subjected to, and the surrounding environment. Preferably, the coefficient value will not exceed 0,4. This has been found by the inventor to be obtainable by using the preferred dimensions, weights and materials as herein described in normal operating conditions and environments.

It is preferred that the weight of each support foot 10 be less than 20kg but more than 15kg to allow a worker to lift the support foot 10 with relative ease while being heavy enough to counter easy displacement when deployed. The weight of the foot 10 will, however, be chosen to meet conditions of use of the fencing system.

Figures 7 to 11 show a further embodiment of a support foot 10 consisting of a footing block 12 and eight heel supports or feet members 14.

The footing block 12 is formed substantially of the same materials, weight and configuration as the footing block of Figure 2, with the exception of the configuration of the mounting receptacle tubes 18. Figure 7 shows there are now fourteen tubes 18, being arranged in three clusters 18a, 18b, 18c, with one cluster 18a, 18b including four tubes near each opposite terminal end of the footing block 12, and the third cluster 18c of six tubes centrally located.

Each terminal end cluster 18a, 18b provides an anchoring location for up to four fencing panel support poles, thereby allowing the fencing panels to be arranged in a multitude of directions extending from a common junction. The centrally located cluster 18c of six tubes provides an anchoring (or mounting) location for up to six fencing panels. The overall arrangement of receptacle tubes provides the user with a greater choice of available mounting orientations and number of fencing panels that can be supported at one footing block to suit the

environment and case specific requirements, and obviates the need for a plurality of support feet to be used in supporting multiple panels at one location.

It will be appreciated that other embodiments may include additional tubes forming separate clusters, for example three, four or even eight mounts. The
5 clusters may also be arranged in other locations along the footing block.

Each tube 18 is preferably spaced about 6mm to 8mm from an adjacent tube 18. This is preferably about equal to the thickness of the centre panel 16 separating the transversely adjacent tubes 18, with a similar distance then formed between the longitudinally-adjacent tube(s) 18 in each cluster. Reinforcement
10 may be applied between the longitudinally-adjacent tubes 18, as necessary, for example by welding the longitudinally adjacent tubes 18 together, or locating a joiner plate (not shown) between inserts, to achieve equal distancing between inserts 18 in longitudinal as well as transverse direction of the footing block 12.

Figures 12 to 15 illustrate a number of possible deployments of fencing
15 panels as supported on a single support foot 10 previously described. As can be seen, the upright mounting members or support poles 32 of the fencing panels 30a to 30h received in the tubes 18 of each cluster maintain a predetermined small gap between them. The clusters allow a common anchoring location for two or more fencing panels to remain in close proximity to each other, thereby
20 minimising the size of the gap between the panels. If desired, in order to completely close the gap, filler strips may be located and secured between adjacent support poles 32.

In Figure 12, four fencing panels 30a, 30b, 30c and 30d are shown mounted at one terminal end cluster 18b of support foot 10. Each fencing panel is
25 arranged substantially orthogonally to its adjacent panels, resulting in a "cross" formation. This arrangement is chosen as an intersection of orthogonally extending fencing lines.

In Figure 13, the four fencing panels 30a, 30b, 30c and 30d are shown mounted at the centrally located cluster 18c. Two fencing panels 30c, 30d, extend
30 in opposite directions transverse to the longitudinal extension of footing block 12, while an additional two fencing panels 30a, 30b, are arranged orthogonally to the former panels 30c, 30d, and substantially parallel to each other, extending in the

same direction. This arrangement allows fencing lines to be erected in three different directions, one including a double fencing line for additional support.

In Figure 14, the four fencing panels 30a, 30b, 30c and 30d are again mounted at the centrally located cluster 18c. Two fencing panels 30a, 30b, extend
5 in opposite directions transverse to the longitudinal plane of footing block 12, while an additional two fencing panels 30c, 30d, are arranged at acute angles extending away from the junction.

In Figure 15, eight fencing panels 30a to 30h are shown mounted in various directions from all three mount clusters 18a, 18b, 18c, allowing a
10 multitude of fencing lines to be erected to extend in various directions.

Beyond providing a common junction location for multiple fencing lines, the footing blocks have the further capability of allowing deployment of single fencing panels at each support foot to provide added stability against toppling over of an erected fencing line. In effect, the single panels will act as outriggers. A clip or
15 clamp may also be used to connect adjacent support poles of fencing panels received at a single footing block toward their upper end for additional stiffening and support for the overall fencing line.

Finally, it is also conceivable to embed the footing block structure 12 in a protective rubber or plastic outer.

THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1. A fencing panel support foot arranged for supporting fencing panels in an upright-erected manner on a floor surface, the support foot including:
 - a footing block of sufficient weight and dimensions such as to prevent
 - 5 toppling-over of an upright fencing panel when mounted to the footing block and when the panel is subjected to predetermined forces normal to the panel's expanse; and
 - three or more mounting receptacles each adapted to receive an upright mounting pole of a fencing panel to be supported at the footing block;
 - 10 wherein the mounting receptacles are arranged in one or more clusters at the footing block, each cluster having at least three said mounting receptacles situated in such close proximity that the upright mounting poles of the fencing panels received therein maintain a predetermined gap between them and provide a common anchoring location for three or more fencing panels in close proximity
 - 15 to each other.
2. A fencing panel support foot according to claim 1, wherein the support foot is of a box-like rectangular configuration and includes three said clusters of receptacles at said footing block, one said cluster arranged near each terminal end of the footing block and one said cluster centrally located between the
- 20 terminal ends of the footing block.
3. A fencing panel support foot according to claim 2, wherein each said cluster includes at least four said mounting receptacles.
4. A fencing panel support foot according to any one claims 1 to 3, wherein the footing block includes three elongate steel plate members in parallel
- 25 separation and which receive between facing sides thereof a plurality of steel tubes that form said mounting receptacles.
5. A fencing panel support foot according to claim 4, wherein the steel plate members are welded to the steel tubes.

6. A fencing panel support foot according to any one of the preceding claims, further including a plurality of ground engaging bodies disposed for supporting the footing block on a surface and made of or including a material defining or providing a high coefficient of friction as regards concrete building floor surfaces to counter slippage of the footing block when subjected to predetermined operational loads.
7. A fencing panel support foot according to claim 6, wherein the plurality of ground engaging bodies comprise cylindrical heel supports formed of a rubber material having sufficient compression strength to react the weight of the footing block without substantial deformation.
8. A fencing panel support foot according to any one of claims 6 or 7, wherein the coefficient of friction value between the material of the ground engaging bodies and a concrete building floor surface does not exceed 0,4.
9. A method for securing a building floor during construction of a building, the method including the steps of:
- providing a plurality of fencing panel support feet to according to any one of claims 1 to 8, and a plurality of fencing panels to be supported by each of said support feet; and
 - arranging the fencing panels and support feet to form a substantially continuous barrier following at least a part of the perimeter of the building floor.