

Collar and Brace for Pedestal**Cross-reference to related application**

[0001] This application claims priority to Australian patent application No 2023282323, the entire contents of which are incorporated herein by reference.

Technical Field

[0002] This invention relates to a collar and brace for use with height adjustable pedestals/pedestal jacks.

Background

[0003] It is known to provide elevated or raised floors, also known as pedestal floors. Elevated flooring incorporates a number of height adjustable pedestals which are uniformly distributed over a subsurface/sub floor such as a concrete floor of a multi-story building, a roof, terrace, or any other surface on top of which it is desired to locate an elevated floor. Other non-exhaustive applications of pedestal floors include technical floors for laboratories, fitting out old buildings, patios, balconies, swimming pool surrounds and decking. The pedestals cooperate in supporting floor panels, such as pavers, or other floor surfaces including joists. The panel members provide a relatively flat high strength floor.

[0004] One particular problem with existing pedestal jacks is stability of the pedestals, particularly lateral stability and this is a problem which is currently and somewhat unsatisfactorily addressed by tying wire to the pedestals which is awkward and messy and does not work well. In particular, wires only work under tension and cannot take compressive forces. Also, attaching the wires can cause movement of the pavers, which is undesirable.

[0005] The present disclosure aims to provide improved bracing of pedestals.

[0006] Any discussion of documents, acts, materials, devices, articles or the like which has been included in the present specification is not to be taken as an admission that any or all of these matters form part of the prior art base or were common general knowledge in the field relevant to the present disclosure as it existed before the priority date of each of the appended claims.

Summary

[0007] According to a first aspect of the present invention, there is provided bracing for use with an adjustable pedestal comprising a collar comprising at least two collar parts for attachment around the exterior of the adjustable pedestal and an adjustable brace for connection between two such collars, wherein the collar when assembled is annular and defines a series of at least four and preferably eight sockets/apertures for receiving one end of the brace.

[0008] Having a two-part collar allows the brace to be attached around a height adjustable pedestal, without having to disassemble the pedestal making attachment of the brace simple and quick.

[0009] Typically, the collar includes a flange portion and a depending skirt portion. The flange portion may define the apertures/sockets.

[0010] In one embodiment the skirt may also define apertures for attachment of a turnbuckle to the collar.

[0011] In a preferred embodiment, the collar comprises two separate and identical generally semi-circular parts which attach together around a threaded exterior of the pedestal to form a ring.

[0012] In an alternative embodiment, the two parts of the collar may be hinged together.

[0013] When assembled, the collar defines a central aperture, a flange extending away from the aperture, which in use is oriented generally horizontally, and a cylindrical skirt depends down from close to the edge of the flange, so that a small lip extends around the perimeter of the collar.

[0014] Preferably, each collar part defines two projecting ends defining projecting ridges, the ridges facing in opposite directions and adjacent the ridges corresponding channels for receiving the ridges of another collar part for connecting the parts into an annular collar.

[0015] The collar can receive at least two different types of brace.

[0016] In one embodiment the brace comprises two elongate elements, typically made from a moulded plastics material which are located side by side and can be moved relative to each other

and defines formations at each end for engagement in the sockets. The elements are preferably identical.

[0017] One side edge of the brace element may define a zigzag or triangular wave formation/surface typically having a pitch and amplitude of from around 1 to 4mm, preferably 1-3mm, more preferably 1-2mm, which engages with the corresponding side of another brace element.

[0018] One end of the brace element may define a formation for engagement in a socket of the collar. The other end of the brace element may define a clip for engaging with an adjacent brace element and a hook at its base for receiving the base of the adjacent brace element.

[0019] Typically, one end of the brace element defines a formation for engagement in a socket of the collar, the formation preferably including at least two or three prongs for insertion into corresponding sockets or apertures.

[0020] The one end of the bracing element may define a lever which extends from a base of the brace element and is generally flexible and defines an end, which in use, when the brace is inserted into the collar, locates underneath the lip to assist in retaining the brace in position and locked into the collar.

[0021] Throughout this specification the word "comprise", or variations such as "comprises" or "comprising", will be understood to imply the inclusion of a stated element, integer or step, or group of elements, integers or steps, but not the exclusion of any other element, integer or step, or group of elements, integers or steps.

Brief Description of Drawings

[0022] Specific embodiments of the present invention will now be described by way of example only, and with reference to the accompanying drawings in which:

Figure 1 shows an arrangement of a pair of adjustable pedestals connected by a brace and collars embodying the present invention;

Figure 2 shows an adjustable pedestal;

Figure 3 shows a first stage in the assembly of the arrangement shown in Figure 1, with the collar attached around the base of the pedestal;

Figure 4 shows the arrangement of Figure 3 but with the collar locked in place below a locking ring;

Figure 5 is a rear perspective view of a collar component;

Figure 6 is a front perspective view of the collar component of Figure 5;

Figure 7 is a underneath plan view of the collar component of Figure 5;

Figure 8 shows a collar formed from two collar components;

Figure 9 is a rear elevation of the collar component of Figure 5;

Figure 10 is an enlarged top view of part of the collar component of Figure 5;

Figure 11 is a perspective view of a brace element from one side;

Figure 12 is a perspective view of the brace element of Figure 11 from the opposite side;

Figure 13 is an end view of the brace element of Figure 11;

Figure 14 is an end view of the opposite end of the brace element to Figure 13;

Figure 15 is a close up view of one end of the brace element;

Figure 16 shows as assembled brace; and

Figure 17 shows as assembled brace connected between two collars.

Description of Embodiments

[0023] Referring to the drawings, Figure 1 shows an arrangement of a pair of pedestals 10, connected by a collar 12 and brace 14 arrangement.

[0024] The pedestals 10 are of the type manufactured and sold by Elmich Pte Ltd of 15 Joan Road, Singapore under the “VersiJack” trade mark. International patent application publication No WO 2007/048204 to the applicant of this application describes an improved slope compensator which incorporates slope adjustment. The contents of that publication are incorporated herein by reference.

[0025] Figure 2 shows the pedestal 10 prior to attachment of the collar 12. As can be seen in the Figure there is a step 20 at the base of the externally threaded portion 22. Figure 3 shows the collar 12 attached around the externally threaded portion 22 above the step 20. Figure 4 shows the same arrangement as Figure 3 but with a locking ring 24 above the collar, securing the collar in place.

[0026] Figures 5 and 6 show a collar part 30. The collar 12 comprises two such parts connected together. Each collar part 30 is generally semicircular, defining a semi-annular outer flange or plate 32 and a depending skirt 34 which extends around the perimeter of the plate. As is best seen in Figure 5 the perimeter of the plate 32 overhangs the skirt such that there is a lip 36 which projects over the top of the skirt 34. The outer portion 42 defines a series of holes including holes for attachment of the brace 14, described in more detail below.

[0027] The semi-annular plate also includes an inner portion 40 which defines connectors 42, 44 at each end which project beyond the ends of the outer plate 32 for joining one collar part to another. and an outer portion 42 which defines a series of holes, including holes for attachment of the brace 14.

[0028] The inner portion 40 is generally horseshoe shaped and extends beyond the semicircular outer portion at both ends. It is generally flat but defines a series of bumps or beads 46 along one edge which assist in engagement of the collar with the underside of the locking ring 14. As is best seen in Figure 5, the upper side of the projecting end 44 defines an upwardly extending arcuate ridge 50. Adjacent the ridge, radially inwards of the end of the outer plate there is an arcuate channel 52 which is the same size and shape as the ridge 50.

[0029] The underside of the projecting end, best seen in Figure 7, defines a depending arcuate ridge 54 which is the same size and shape as the ridge 50. Adjacent the ridge, radially inwards of the end of the outer plate there is an arcuate channel 56 which is the same size and shape as

the ridge 50. Also shown in Figure 7 are a series of beads 57 which assist in engaging the underside of the collar with the pedestal 10.

[0030] Figure 8 shows two collar parts 30 connected together to form a collar 12. To connect the two collar parts, the depending arcuate ridge 54 of one collar part locates in the upwardly facing arcuate channel 52 of the other collar part, and the upwardly extending ridge 50 of the one collar part locates in the downward facing channel 56 of the other collar part.

[0031] Advantageously the two collar parts will connect around an existing pedestal 10 when bracing the pedestal 10 to another pedestal. There is no need to disassemble the pedestal, as there would be if the collar were a complete annulus. Forming the collar from two identical components in the form of collar parts minimises the number of components and helps minimise inventory costs, as well as making assembly easier.

[0032] With reference to Figures 5 to 8, the outer plate 32 of each collar part 30 defines a series of apertures. There are four large apertures 60, on each side of which there is a smaller D shaped aperture 62 which, as will be explained below, in combination with the large aperture 60, receive the end of a brace 14. In between each pair of the D-shaped apertures there is a circular aperture 64. With reference to Figure 8, it can be seen that in the assembled collar 14, there are eight large apertures 64 for receiving a brace spaced at 45° around the perimeter of the collar, (or alternatively, as will be explained below, for receiving a turnbuckle) separated by the apertures 64, which can be used for attaching wire or the like, between the pedestals, if required.

[0033] The large apertures 60 are designed not only to receive one end of the brace but also receive a turnbuckle (not shown) comprising an externally threaded rod with a hex nut and washer on each end. As is best seen in Figure 8, the large apertures 60 extend as far as and into the skirt 34 and define an associated U-shaped aperture 66 in the top of the skirt. With reference to Figures 9 and 10 in particular, beneath the large aperture 60 there is a recess 70 having a V shaped base for receiving the hexagonal nut of the turnbuckle. As is best seen in Figure 10, adjacent the recess 70, there is a slot 72 for receiving the sides of the washer of the turnbuckle.

[0034] Figures 11 to 14 show the components that together form the brace 14. The brace 14 comprises two identical brace elements 80 that are attached together to form the brace. With reference to Figure 12 in particular, the brace element is an elongate member 80 having a rectangular top 82, one elongate side 84 of which defines a zigzag or triangular wave

formation/surface 86, typically having a pitch/half wavelength of about 1 to 2mm which engages with the corresponding side 86 of another brace element 80. A rib or wall 88 depends down from the top of the brace element. One end of the brace element defines a hook or channel 90 at its base and a hinged clip 92 at the top of the brace element.

[0035] The opposite end of the brace element defines male engaging formations for engaging in the apertures. In particular it defines a central prong 94 and two side prongs 96, each of which has a D-shaped cross section corresponding to the shape of the D shaped apertures 62 in the collar. As is best seen in Figure 13, the central prong 96 has a V-shaped base so it will fit in the recess 70 (which may also receive the nut of a turnbuckle as described above). Figure 15 is a side view of the prong 94, which shows that the rear face of the prong 94 defines a formation 98 having a first portion 100 which is generally parallel to the axis of the prong and a second angled portion 102 which is angled towards that axis and towards the top of the brace element. Also shown in Figure 15 is a lever 104. The top of the lever 106 is best seen in Figure 13 and it is flexible and flexes at its base 108.

[0036] When assembled as shown in Figure 15 two brace elements are connected side by side with the sides 84 defining the formations 86 facing and in contact with each other. This allows the length of the brace to be adjusted in small increments corresponding to the width/amplitude of the triangular wave formations. In theory, the combined brace can range from slightly longer than a single brace element, around 300mm to almost twice as long, around 550mm although there is a minimum length of the sides 84 which should be in contact to ensure the structural integrity and stiffness of the brace 14. As can be seen, each end of the brace 14 defines the prongs 96 for engaging with a collar 12.

[0037] In use, with reference to Figures 2 and 3, in particular, the collar 12 is assembled from the two parts 30 around the base 20 of the threaded portion of the pedestal 10. No disassembly of the pedestal is required. As shown in Figure 4, the locking ring 24, omitted from Figures 2 and 3, is then rotated down to lock the collar at the base of the threaded portion 22. As shown in Figure 4, a brace 14, adjusted to a suitable length can then be connected between two such collars on two adjacent pedestals. Depending on its location, each pedestal can be connected to up to eight adjacent pedestals, if required, although the pedestals may be braced to the four closest pedestals at 90° intervals. If additional bracing is required wires may be connected between the apertures 64. Instead of the braces 14, turnbuckles may be connected between the collars. In this case the position of the nut and washer on each turnbuckle is adjusted to the

distance between the collars and the nuts and washers are then slotted through the apertures 60 into the recesses 70 and 72 respectively.

[0038] The brace can also be used at the top of a pedestal (particularly when used with high pedestals which include extenders), by putting the collar 12 between the underside of the pedestal top and the locking ring 24 which can be tightened up underneath the collar compressing it against the underside of the top of the pedestal.

[0039] The brace 14 once adjusted to the necessary length is attached between the collars 12 by inserting the prongs 94 and 96 into the apertures 60 and 62 respectively. Having the end of the prong inserted into at least two and preferably three apertures inhibits rotation of the brace which would be detrimental. When inserted into the aperture 60 the prong 94 locates in the channel 70. The wedge 102 pushes the prong towards the centre of the collar and the lever 104 slides up the outside of the skirt. When the prong 96 is fully inside the channel 70, the top of the lever snaps under the rim 36 locking the brace to the collar. The brace can be removed from the collar by manipulating the lever 104.

[0040] The above described system allows bracing to be applied to pedestals simply and without having to undo the pedestals to attach bracing. The eight large apertures allow bracing to be applied every 45°, if required. The system allows the use of a turnbuckle, as well as the more sophisticated custom brace 14 described above, and also allows additional bracing using wires.

[0041] It will be appreciated by persons skilled in the art that numerous variations and/or modifications may be made to the above-described embodiments, without departing from the broad general scope of the present disclosure. The present embodiments are, therefore, to be considered in all respects as illustrative and not restrictive.

CLAIMS:

1. Bracing for use with an adjustable pedestal comprising a collar comprising at least two collar parts for attachment around the exterior of the adjustable pedestal and an adjustable brace for connection between two such collars, wherein the collar when assembled is annular and defines a series of at least four and preferably eight sockets for receiving one end of the brace.
2. Bracing as claimed in claim 1 wherein the collar comprises two separate and identical generally semi-circular parts which attach together around a threaded exterior of the pedestal to form a ring.
3. Bracing as claimed in claim 1 or claim 2 wherein, when assembled the collar defines a central aperture, a flange extending away from the aperture, which in use is oriented generally horizontally, and a cylindrical skirt depending down adjacent a perimeter edge of the flange, so that a small lip extends around the perimeter of the collar.
4. Bracing as claimed in any one of claims 1 to 3 wherein the flange portion defines the apertures/sockets.
5. Bracing as claimed in claim 4 wherein the skirt also defines apertures which may be suitable for the attachment of a turnbuckle to the collar.
6. Bracing as claimed in any one of claims 1 to 5 wherein each collar part defines two projecting ends defining projecting ridges, the ridges facing in opposite directions and adjacent the ridges under the flange there are corresponding channels for receiving the ridges of another collar part, for connecting the collar parts together.
7. Bracing as claimed in any one of claims 1 to 3 wherein the brace comprises two elongate brace elements, which are located side by side to form the brace, and can be moved relative to each other and define formations at each end for engagement in the sockets.
8. Bracing as claimed in claim 7 wherein the brace elements are substantially identical, and preferably made from a moulded plastics material.
9. Bracing as claimed in claim 7 or claim 8 wherein one side edge of the brace element defines a zigzag or triangular wave formation/surface typically having a pitch and amplitude of

from around 1 to 4mm, preferably 1-3mm, more preferably 1-2mm, which engages with the corresponding side edge of another brace element to allow the brace elements to lock together in a range of positions to adjust the length of the brace.

10. Bracing as claimed in claim 9 wherein each brace element defines a clip which is configured to engage over the top of an adjacent brace element to lock the brace elements in position relative to each other.

11. Bracing as claimed in any one of claims 7 to 10 wherein one end of the brace element defines a formation for engagement in a socket of the collar, the formation preferably including at least two prongs, and more preferably three prongs, for insertion into corresponding sockets or apertures in the collar.

12. Bracing as claimed in claim 11 when dependent on claim 10 wherein an opposite end of the brace element defines the clip for engaging with an adjacent brace element, and a hook at its base for receiving a base of the adjacent brace element.

13. Bracing as claimed in claim 3 or any one of claims 4 to 12 when dependent on claim 3, wherein the one end of the bracing element defines a lever which extends from a base of the brace element and is generally flexible and defines an end which in use, when the brace is inserted into the collar, locates underneath the lip to assist in retaining the brace in position and locked into the collar.