DEVICE FOR USE IN ASSEMBLING RAISED FLOORING

Cross-Reference to Related Applications

The present application claims priority from Australian Provisional Patent Application No 2011903661 filed on 8 September 2011, the content of which is incorporated herein by reference.

Field of the Invention

This invention relates to a device for use in assembling raised flooring.

Background of the Invention

It is known to provide elevated or raised floors, also known as pedestal floors. Elevated flooring typically incorporates a number of height adjustable pedestals (often referred to as pedestal jacks) uniformly distributed over a sub-surface/sub-floor, such as a concrete floor of a multi-storey building, a roof, terrace, or any other surface over 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 or spa surrounds and decking. The pedestals co-operate in supporting floor panels, such as pavers, or bearers or the like.

One common type of height adjustable pedestal comprises a number of inter-engaged moulded plastic components including a base which rests on the sub-floor, one or more extenders connected to the base or to another extender, and a head mounted on the base or the top extender on which the raised floor is supported. The components are internally and/or externally threaded, and relative rotation of the components raises and lowers the height of the pedestal. The higher the raised floor is from the sub-floor, the more extenders are typically required. For safety reasons, there needs to be sufficient engagement between the threads of the extenders and the base so that the components are securely engaged with each other and so that the load carried by the pedestal is distributed over a number of turns of thread. It is very time consuming and tedious for workers assembling the pedestals to manually rotate the components to engage them together correctly, particularly for relatively high raised floors, and to adjust the height of the pedestal.

International patent application No WO07/048204 discloses one such type of adjustable pedestal as does the later filed Australian Patent Application No 2011202121, both filed in the name of the applicant of the present application, the contents of which are incorporated herein by reference.

The present invention aims to speed up the assembly of such pedestals and provide a device for so doing.

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 invention as it existed before the priority date of each claim of this application.

Summary of the Invention

In a first broad aspect, the present invention provides a device for attachment to a cordless electric drill for adjusting the height of a pedestal jack, including an extender having a projecting tab, the device comprising:

a body portion

a shaft extending from one side of the body portion for direct attachment to or indirect engagement with the chuck of a cordless drill or the like; and

one or more engagement means for engaging with the tab;

the arrangement being such that rotation of the device when engaged with the drill causes the engagement means to engage with the tab and rotate the extender.

In a related aspect the present invention provides the combination of:

a device for attachment to a cordless electric drill for adjusting the height of a pedestal jack; and

an extender having a projecting tab, wherein

the device comprises:

a body portion;

a shaft extending from one side of the body portion for direct attachment to or indirect engagement with the chuck of a cordless drill or the like; and

one or more engagement means for engaging with the tab;

the arrangement being such that rotation of the device when engaged with the drill causes the engagement means to engage with the tab and rotate the extender

In one embodiment, the tab projects radially from the top of the extender. Typically, two tabs are provided on the extender spaced on opposed sides of the extender.

The engagement means of the device may comprise a plurality of tabs castellations/crenelations extending from the periphery of the body portion in the opposite direction to the shaft. Typically there will be at least 3 or 4 tabs, most preferably at least 8 and more typically around 16.

Typically, the shaft will be hexagonal.

In one embodiment, for use with specific pedestal heads the device further defines a central tube, and one or more prongs spaced from the central tube and arranged and configured to locate in apertures in the head, in use.

A circular ring may project from the body portion disposed between the prongs and the perimeter of the body portion for spacing the device from the head.

Advantageously the device may be attached to the chuck of a cordless electric drill and may be spun/rotated using the drill, turning the extender. This can be done much quicker than manual turning of the extender with a resultant increase in productivity. Turing the extenders to raise them is also a relatively tedious task for workers so their job is made easier.

Likewise the device may be used to rotate the heads of pedestal jacks such as those described in WO07/048204 and Australian Patent Application No 2011202121,

The invention also encompasses a method of raising and/or lowering an extender of a pedestal jack using a cordless drill and a device embodying the present invention connected to the drill and engaged with the extender to rotate the same.

Brief Description of the Drawings

A specific embodiment of the present invention will now be described, by way of example only, and with reference to the accompanying drawings in which:-

Figure 1 is an upper isometric view of a device embodying the present invention;

Figure 2 is a bottom isometric view of the device shown in Figure 1;

Figure 3 is a side view of the device shown in Figure 1;

Figure 4 is a view of a head and a slope adjustment plate of an adjustable pedestal;

Figure 5 is side isometric view of the device engaged with an extender;

Figure 6 is a top isometric view of the device engaged with the head of Figure 5; and

Figure 7 is a view of the underside of the head showing the engagement of the device in more detail.

Detailed Description of a Preferred Embodiment

Referring to the drawings, Figures 1 to 3 show a device in the form of a tool 10 for attachment to a cordless electric drill for adjusting the height of a pedestal jack such as is shown in AU 2011202121. The tool may be injection moulded in a single piece from a plastics material.

The tool 10 includes a body portion in the form of a circular plate 12. With reference to Figure 1, a cylindrical boss 14 extends from an upper side of the plate from the top of which extends a hexagonal shaft 16 having an annular cross-section defining a central axis 17. Six triangular buttresses 18 extend radially from near the perimeter 20 of the plate to the boss 14 to stiffen and strengthen the plate 12 against flexing and twisting.

With reference to both Figures 1 and 2, it can be seen that on the lower side, the perimeter of the plate 12 is castellated/crenelated defining a series of sixteen tapering tabs 22 extending around the perimeter of the plate 12 separated by gaps/crenelations 24. Each tab tapers width and depth wise from the plate to a rounded end 26, distal from the plate.

Spaced inside the perimeter, there is a depending annular circular ring 30 centred on the centre of the plate and on the central axis 17 of the device.

A cylindrical tube 40, having an annular cross section depends from the centre of the underside of the plate. As will be discussed in more detail below, the tube 40 is sized to locate inside an aperture in a head of a pedestal (refer to Figures 4 and 7, in particular). Six ribs 42 extend radially from the perimeter of the tube spaced at 60° from each other. At the distal end of each rib there is a prong 44 having a rounded end which projects away from the plate 12.

Figure 4 shows a slope compensator head 50, and a slope compensator plate 60, which may be used with the head to provide slope compensation, but is removed for lowering and raising the head using the tool 10.

The structure of the head 50 is described in detail in AU 2011202121. There is a relatively large diameter circular aperture 52 in the centre of the head. A circular wall 54, whose centre is offset relative to the aperture 52, extends around the aperture 52. A part-spherical surface 56 extends around the wall. A ring of twelve circular apertures 58 extend through the surface 56 around the wall 54.

The use of the tool will now be described with reference to Figures 5 to 7, in particular. Figure 5 illustrates the tool being used to rotate an extender 100. The extender has an externally threaded lower portion 102 and an internally threaded upper portion 104 having an open upper end and open base. The internally threaded portion

104 is shaped and configured to receive the externally threaded portion 102 of another extender so that a plurality of extenders may be assembled together to increase the height of a pedestal. At the top of the extender a tab 106 can be seen which extends outwards in a radial direction. A similar tab, (not shown) is provided on the other side of the extender diametrically opposed to the tab 106.

In use, the hexagonal shaft 16 of the tool is either inserted directly into the chuck of a cordless drill (not shown) or, more typically, inserted into a connector (not shown) which defines a hexagonal aperture for receiving the shaft 16 and a narrower typically hexagonal portion sized to locate in the chuck of the cordless drill. The connector may be made of metal or plastics material.

With reference to Figure 5, the tool is located over the top of the extender. The ring 30, tube 40 and prongs 44 pass through the open top end and locate inside the extender. The tabs 22 locate around the outside of the top of the extender and when the tool is rotated one tab 22 of the tool abuts against each of the tabs 106 defined on the extender and rotates the extender and the tool rotates. The provision of a plurality of tabs 22 on the tool means that the tool engages the extender quickly after turning though only a few degrees.

Figures 6 and 7 illustrate the engagement of the tool 10 with a head 50. The circular ring 30 rests on the upper surface of the head 50. The tube 40 locates in the central hole 52 of the head. The prongs 44 locate in six of the twelve holes 58 extending around the central hole 52. As is best seen in Figure 7, one prong 44 locates in every second hole 58. Which holes the prongs locate in is not critical. It will be appreciated that when the tool is rotated the prongs 44 will abut the edges of their respective holes and cause the head to rotate also.

The number of prongs may be decreased or increased from that shown up to a maximum of twelve for use with the head shown. The number of tabs 22 on the tool may be varied also and in theory as few as two tabs could be provided although, as discussed above having a large number of tabs makes the engagement of the tool with an extender quicker and easier.

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.

THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1. A combination of:

a device for attachment to a cordless electric drill for adjusting the height of an adjustable pedestal; and

an extender having at least one projecting tab, wherein

the device comprises:

a body portion;

a shaft extending from one side of the body portion for direct attachment to or indirect engagement with the chuck of a cordless drill or the like; and

one or more engagement means for engaging with the tab;

the arrangement being such that rotation of the device when engaged with the drill causes the engagement means to engage with the tab and rotate the extender.

2. The combination of claim 1 wherein the tab projects radially from the top of the extender.

3. The combination of claim 2 wherein two tabs are provided on the extender spaced on opposed sides of the extender.

4. The combination of claim 2 or claim 3 wherein the engagement means of the device comprises a plurality of tabs extending from the periphery of the body portion in the opposite direction to the shaft.

5. The combination of claim 4 wherein there at least 3 tabs extending from the periphery of the body portion in the opposite direction to the shaft.

6. The combination of any one of claims 2 to 5 wherein the device further defines a central tube, and one or more prongs spaced from the central tube.

7. The combination of claim 6 wherein a circular ring projects from the body portion disposed between the prongs and the perimeter of the body portion for spacing the device from a head of an adjustable pedestal.

8. A device for attachment to a cordless electric drill for adjusting the height of a pedestal jack, the pedestal including an extender having a projecting tab, the device comprising:

a body portion;

a shaft extending from one side of the body portion for direct attachment to, or indirect engagement with, the chuck of a cordless drill or the like; and

engagement means for engaging with the tab, the engagement means comprising at least three tabs spaced around and extending from the periphery of the body portion in the opposite direction to the shaft;

the arrangement being such that rotation of the device when engaged with the drill causes the engagement means to engage with the tab and rotate the extender.

9. The device of claim 8 further including a projecting central tube extending from the opposite side of the body portion to the shaft and one or more projecting prongs spaced from the central tube.

10. The device of claim 8 further including a circular ring projecting from the body portion disposed between the prongs and the perimeter of the body portion.

11. The device of any one of claims 8 to 10 wherein the engagement means comprising at least eight tabs spaced around and extending from the periphery of the body portion.

12. The device of claim 11 wherein the engagement means comprising at least sixteen tabs spaced around and extending from the periphery of the body portion.

13 A method of raising and/or lowering an extender of a pedestal jack using a cordless drill or the like and a device attached to the cordless electric drill, the extender defining at least one projecting tab, wherein

the device comprises:

a body portion;

a shaft extending from one side of the body portion for direct attachment to or indirect engagement with the chuck of a cordless drill or the like; and

one or more engagement means for engaging with the tab; comprising

attaching the device either directly or indirectly to the cordless drill or the like such that rotation of the drill chuck causes rotation of the device;

placing the device over the top of the extender; and

rotating the drill chuck to cause the engagement means to engage with the tab of the extender thereby rotating the extender to raise or lower the extender.