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(54) Stabilizer leg

(57) A stabilizer leg comprising an upper outer part having telescopically slidable therein a lower inner part having a ground engageable portion and a wear pad being adjustably engaged with one of said parts to permit of adjustment of clearance between the wear pad and an opposed surface of the other of said parts.

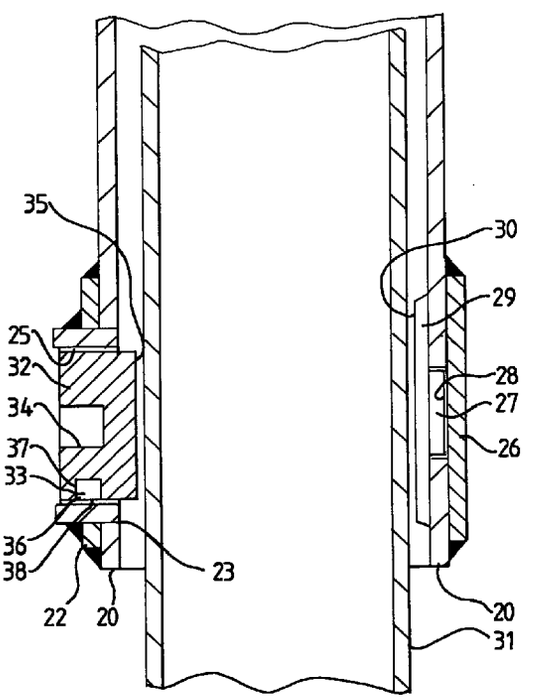

FIG 3

EP 0 867 566 A2

Description

This invention relates to a stabilizer leg for a vehicle and more particularly , but not exclusively, to stabilising frames in or for excavators of the kind comprising an excavator assembly adapted for mounting on the stabilising frame which is securable to the rear of a tractor or like vehicle wherein the excavator assembly comprises a boom pivotally mounted at its lower end for movement up and down in a vertical plane and carrying at its outer end a pivotally mounted dipper arm upon which is mounted an excavating tool such as a bucket, and wherein the boom is mounted also for traversing movement about a vertical axis so as to be capable of being swung from side-to-side of the centre line of the tractor, the frame having at each side an extensible leg member whereby, for example, when an excavator comprising such an excavator assembly, frame and tractor is operating upon uneven ground or soft ground or upon an inclination, the legs may be extended as required to ensure a firm support for the stabilising frame.

An object of the invention is to provide a new and improved stabilizer leg. A further object of the invention is to provide a new and improved stabilising frame in or for an excavator of the kind above specified,

According to one aspect of the invention we provide a stabilizer leg comprising an upper outer part having telescopically slidable therein a lower inner part having a ground engageable portion and a wear pad being adjustably engaged with one of said parts to permit of adjustment of clearance between the wear pad and an opposed surface of the other of said parts.

The wear pad may be adjustably engaged with the outer of said parts to permit of adjustment of clearance between the wear pad and the inner part.

The wear pad may be threadedly engaged with the outer part whereby rotation of the wear pad relative to the outer part causes relative movement between said wear pad and the outer part in a direction transverse to a direction in which said parts telescope.

Means may be provided to provide a frictional resistance to said relative threaded rotation.

The wear pad may have an externally threaded part in said threaded engagement with an internally threaded part of said outer part.

One of said threaded parts, preferably the wear pad, may be provided with an insert for providing a frictional resistance to relative threaded rotation between the wear pad and said outer part.

The wear pad may be generally cylindrical, said cylindrical surface being provided with a thread to provide said externally threaded part.

The wear pad may be made of plastics material to provide said externally threaded part.

The plastics material may comprise nylon.

The nylon may be provided with a lubricant.

The wear pad may be provided with a socket to receive a tool whereby the wear pad may be rotated.

The socket may be a square or other non-circular section recess.

The outer part may be provided with a boss and the boss may be provided with said internal thread.

The outer part may be provided with a further wear pad on a side thereof opposite to said adjustable wear pad.

The further wear pad may be fixed relative to the outer part or alternatively may also be adjustable in the same or a different manner to that of the first mentioned adjustable wear pad.

Where the leg is rectangular in section two adjacent sides of the outer part may be provided with an adjustable wear pad and the two opposite sides of the outer part may be provided with a further wear pad which may be fixed or adjustable.

In use, the provision of the wear pads ensures that the inner part telescopes relative to the outer part with a desired clearance between the inner part and the wear pads.

The desired clearance between the inner part and the wear pads may be maintained simply by rotating one or each of the wear pads, as necessary, by engagement of a suitable tool within the above mentioned recess to take up the desired wear.

Although in the above example, the case of a insert provided with a "stiff thread" is described if desired any other suitable means for constraining rotation of the wear pad relative to the outer part may be provided.

The upper part of the leg may be adapted to be fixed relative to a vehicle.

Two stabiliser legs may be adapted to be provided on opposite sides of a vehicle.

According to a second aspect of the invention we provide a stabilising frame in or for an excavator of the kind specified wherein the frame has at each of two opposite sides a stabiliser leg according to the first aspect of the invention.

Preferably the stabilizer legs are inter-connected by cross rail means to provide the stabilising frame.

The cross rail means may comprise a pair of cross rails one disposed adjacent a lower part of each outer part and the other provided thereabove but spaced downwardly from a top end of the outer part.

The cross rail means may provide guide ways for side shifting movement of a king post assembly which may carry an excavator assembly.

An embodiment of the invention will now be described by way of example with reference to the accompanying drawings wherein

FIGURE 1 is a rear view of a stabilising frame for an excavator,

FIGURE 2 is a plan view of one of the legs of Figure 1,

FIGURE 3 is a section on the line 3-3 of Figure 1,

FIGURE 4 is a perspective view of a wear pad for use in the invention described with reference to Fig-

ures 1 to 3, and

FIGURE 5 is a perspective view of the rear of an excavator embodying the invention.

Referring to the Figures a rear elevation of a stabilising frame of an excavator is illustrated generally at 10 and comprises a pair of upper, outer, housing parts 11 inter-connected by a lower cross rail 12 disposed adjacent a lower end 13 of each housing 11 and an upper cross rail 14 disposed above the rail 12 and downwardly from an upper end 15 of the housing 11. The rails 12, 14 provide a guide means for a king post assembly 16 on which a conventional back-hoe type of excavator is mounted as best shown in Figure 5.

The back-hoe excavator is mounted by the stabilizing frame 10 on the rear of a excavator vehicle 1 and comprises a bucket 2 pivotally mounted for movement in a vertical plane on a dipper arm 3 which in turn is pivotally mounted, again for movement in a vertical plane, on a boom 4. The inner end of the boom 4 is pivotally mounted, for movement in a horizontal and vertical plane, on the stabilising frame 9 by means of the king post 16. Hydraulic rams 5 are provided to effect the various pivotal movements of the bucket and the dipper arm relative to the dipper arm and the boom respectively.

As best shown in Figure 2 each housing part 11 is made as a U-shaped pressing 20 which is closed by a plate 21 welded across the open mouth thereof and extending longitudinally thereof. A reinforcing bracket, also of U-shaped cross-section is welded around the housing adjacent its lower end as shown at 22 and a pair of bosses 23 are welded in apertures 24 provided in the housing part 20 and the reinforcing bracket 22 so as to provide a pair of wear pad housings.

The bosses 23 providing the wear pad housings have an internally threaded passage 25.

Directly opposite each boss 23 the housing part 20 is provided with an aperture 26 whilst the reinforcing bracket 22 is not provided with an aperture at this position.

A fixed wear pad of a suitable material, in the present example a suitable self lubricated nylon, is shown at 27 and comprises a spigot part 28 received within the aperture 26 and an enlarged head part 29 having an inwardly facing surface 30 which is adapted to provide a wear surface for an inner, lower leg, part 31 of the stabilizer.

Threadedly received within each boss 23 is an adjustable wear pad 32 which has an externally threaded surface cylindrical 33 for threaded engagement with the internally threaded surface 25 of the bosses 23. The adjustable wear pad is made of suitable material which may be a self lubricating nylon.

The adjustable wear pad has a socket 34 of suitable non-circular shape in the present example of square cross section, for receiving a suitable tool such as a standard socket set bar, whereby the adjustable wear pad may be rotated relative to the boss 23 and so as to move an operative wear surface 35 thereof, transversely of the direction of telescopic movement between the inner and outer leg parts, relative to an opposed surface of the inner leg part 31.

The adjustable wear pad is provided with a "stiff thread" facility whereby resistance to rotation is provided and in particular inadvertent rotation in service is resisted. In the present example, this is provided by means of a generally radially disposed plug 36 threadedly received in a recess 37 of cylindrical configuration.

The plug 36 is made of suitable synthetic plastics material, in this case nylon 6, and is preferably provided with a plane operative surface 38 and is dimensioned so as to be an interference fit with the internal thread of the boss 26 thereby providing a resistance to relative rotation therebetween.

In use, when it is desired to adjust the clearance between the inner and outer leg parts, the or each adjustable wear pad 32 is rotated until the inner leg part 31 is clamped against the opposed fixed wear pad and then they are backed off an appropriate amount, in the present example ¼ of a turn, the thread being of 3mm pitch. Such adjustment is quick and simple.

The features disclosed in the foregoing description or the following claims, or the accompanying drawings, expressed in their specific forms or in terms of a means for performing the disclosed function, or a method or process for attaining the disclosed result, as appropriate, may, separately or in any combination of such features, be utilised for realising the invention in diverse forms thereof.

Claims

1. A stabilizer leg comprising an upper outer part having telescopically slidable therein a lower inner part having a ground engageable portion and a wear pad being adjustably engaged with one of said parts to permit of adjustment of clearance between the wear pad and an opposed surface of the other of said parts.

2. A stabilizer leg according to Claim 1 wherein the wear pad is adjustably engaged with the outer of said parts to permit of adjustment of clearance between the wear pad and the inner part.

3. A stabilizer leg according to claim 1 or claim 2 wherein the wear pad is threadedly engaged with the outer part whereby rotation of the wear pad relative to the outer part causes relative movement between said wear pad and the outer part in a direction transverse to a direction in which said parts telescope.

4. A stabilizer leg according to claim 3 wherein means are provided to provide a frictional resistance to

said relative threaded rotation.

5. A stabilizer leg according to claim 3 or claim 4 wherein the wear pad has an externally threaded part in said threaded engagement with an internally threaded part of said outer part.

6. A stabilizer leg according to claim 5 wherein one of said threaded parts is provided with an insert for providing a frictional resistance to relative threaded rotation between the wear pad and said outer part.

7. A stabilizer leg according to claim 6 wherein the pad is provided with said insert.

8. A stabilizer leg according to any one of claims 5 to 7 wherein the wear pad has a generally cylindrical surface, said cylindrical surface being provided with a thread to provide said externally threaded part.

9. A stabilizer leg according to any one of claims 5 to 8 wherein the wear pad is made of plastics material to provide said externally threaded part.

10. A stabilizer leg according to claim 9 wherein the plastics material comprises nylon.

11. A stabilizer leg according to claim 10 wherein the nylon may be provided with a lubricant.

12. A stabilizer leg according to any one of the preceding claims wherein the wear pad is provided with a socket to receive a tool whereby the wear pad may be rotated.

13. A stabilizer leg according to claims 12 wherein the socket is a square or other non-circular section recess.

14. A stabilizer leg according to claim 5 or any one of claims 6 to 13 wherein dependent directly or indirectly on claim 5 wherein the outer part is provided with a boss and the boss is provided with said internal thread.

15. A stabilizer leg according to any one of the preceding claims wherein the outer part is provided with a further wear pad on a side thereof opposite to said adjustable wear pad.

16. A stabilizer leg according to claim 15 wherein the further wear pad is fixed relative to the outer part.

17. A stabilizer leg according to claim 15 wherein the further wear pad is adjustable in the same or a different manner to that of the first mentioned adjustable wear pad.

18. A stabilizer leg according to any one of the preceding claims wherein the leg is rectangular in section and wherein two adjacent sides of the outer part are provided with an adjustable wear pad.

19. A stabilizer leg according to claim 18 wherein two opposite sides of the outer part are provided with a further wear pad which may be fixed or adjustable.

20. A stabilizer leg according to any one of the preceding claims wherein the upper part of the leg is adapted to be fixed relative to a vehicle.

21. A stabilizer leg according to claim 20 wherein two stabiliser legs are adapted to be provided on opposite sides of a vehicle.

22. A stabilizing frame in or for an excavator of the kind specified wherein the frame has at each of two opposite sides a stabilizer leg according to any one of claims 1 to 21.

23. A stabilizing frame according to claim 23 wherein the stabilizer legs are inter-connected by cross rail means to provide the stabilizing frame.

24. A stabilizing frame according to claim 23 wherein the cross rail means comprises a pair of cross rails one disposed adjacent a lower part of each outer part and the other provided thereabove but spaced downwardly from a top end of the outer part.

25. A stabilizing frame according to claim 23 or claim 24 wherein the cross rail means provides guide ways for side shifting movement of a king post assembly which may carry an excavator assembly.

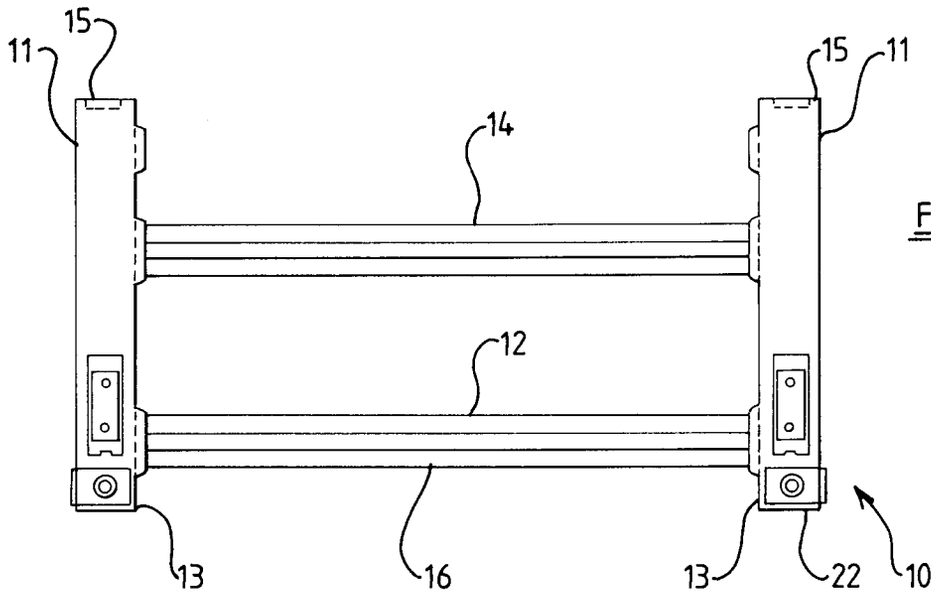

FIG 1

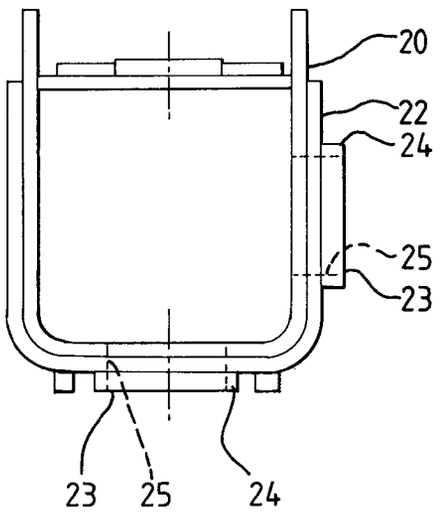

FIG 2

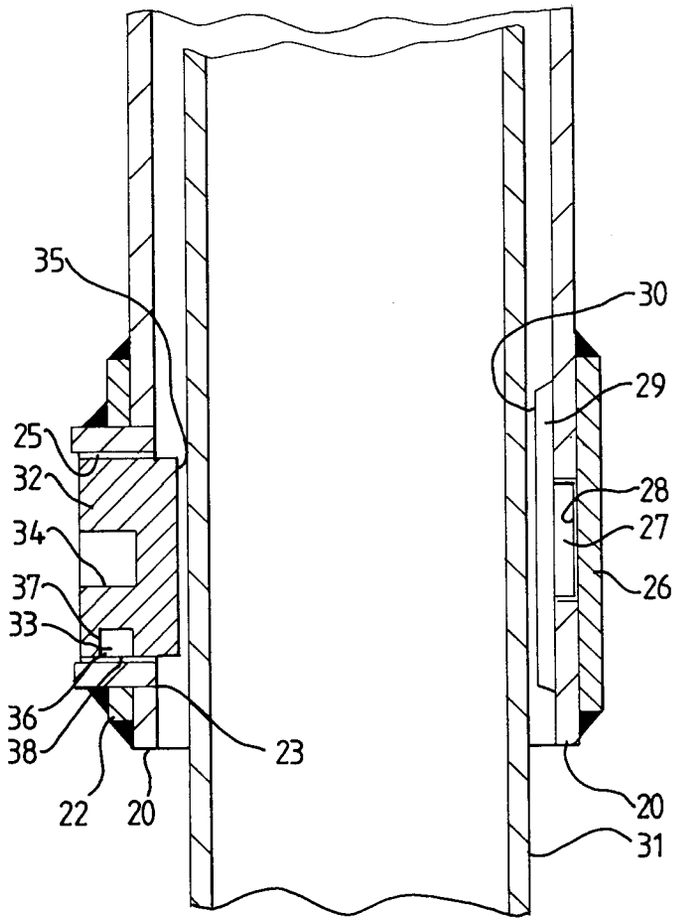

FIG 3

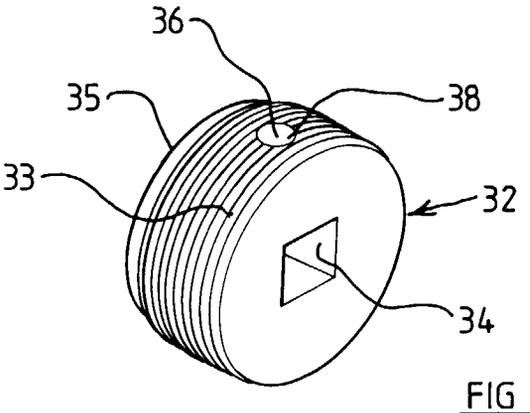

FIG 4

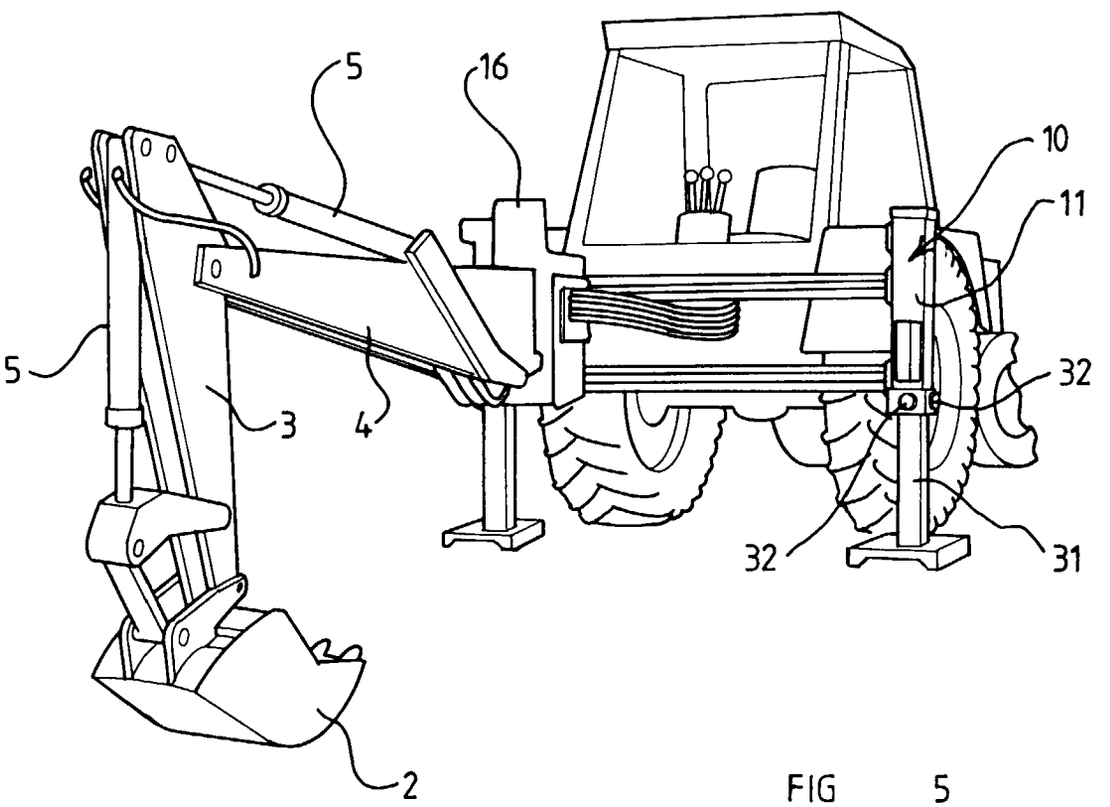

FIG 5