WE CLAIM :

1. A bearing assembly for supporting a journal of a grinding mill body, comprising a frame and a plurality of fluid bearings, said fluid bearings each comprising a polymer bearing pad mounted to a base, said polymer bearing pad comprising an outer surface, at least one recess for receiving lubricating fluid from at least one passage of said base and distributing said lubricating fluid to said outer surface and mounting element for securely mounting said polymer bearing pad to said base, said base also comprising at least one lubricating fluid supply port in fluid communication with said at least one passage, wherein said base is mounted to said frame so that said fluid bearings self adjust to changes in the angular position of the journal during operation of said grinding mill body.

2. The bearing assembly of claim 1, wherein said mounting element comprises a mounting portion extending from said polymer bearing pad, said mounting element comprising a protrusion from a mounting surface opposite to said outer surface for engaging a flange of said base, said flange being located at an outer edge of said base.

3. The bearing assembly as claimed in claim 1 or 2, wherein said mounting element comprises at least one opening for receiving at least one fastener for mounting said polymer pad to said base; said at least one recess comprises a locking tab for retaining a head portion of said fastener within said at least one recess and said at least one fastener comprising a bore for conveying lubricating fluid from said at least one passage to said at least one recess.

4. The bearing assembly as claimed in claim 1 or 2, wherein said mounting element comprises at least one opening for receiving at least one fastener for mounting said polymer pad to said base, said bearing assembly further comprising a locking element for retaining said at least one fastener within said at least one recess.

5. The bearing assembly as claimed in any one of claims 1 to 4, wherein said polymer bearing pad substantially covers an outer surface of said base to create a fluid seal between said polymer bearing pad and said base.

6. The bearing assembly as claimed in any one of claims 1 to 5, comprising a chamfer at an outer edge for retaining lubricating fluid at said outer edge and transferring said lubricating fluid to a journal, wherein said chamfer has an outer edge that is displaced from a journal when said journal engages said polymer pad.

7. The bearing assembly as claimed in any one of claims 1 to 6, said at least one recess of said polymer bearing pad comprises at least one interconnecting passage for fluidly connecting said at least one recess to said at least one passage of said base.

8. The bearing assembly as claimed in any one of claims 1 to 7, comprising a plurality of said polymer bearing pads, wherein said respective outer surfaces of said polymer pads form a substantially uniform bearing surface for said journal, wherein each of said polymer bearing pads comprises at least one lateral connecting portion for mutual engagement with a corresponding lateral connecting portion of an adjacent polymer bearing pad.

9. The bearing assembly as claimed in any one of claims 1 to 7, wherein said base comprises a first surface, a second surface, a plurality of said at least one passages and a plurality of said at least one lubricating fluid supply ports, wherein said at least one passages are in fluid communication with said at least one lubricating fluid supply ports, said first surface and said second surface, and

wherein there is a plurality of said polymer bearing pads, a first of said polymer bearing pads being mountable to said first surface and a second of said polymer bearing pads being mountable to said second surface,

wherein said first polymer bearing pad comprises a first outer surface and at least one recess for receiving lubricating fluid from at least one of said plurality of passages and distributing said lubricating fluid to said first outer surface, and

said second polymer bearing pad comprises a second outer surface and at least one recess for receiving lubricating fluid at least one of said plurality of passages and distributing said lubricating fluid to said second outer surface,

wherein said first outer surface is partially curved such that said first polymer bearing pad acts as a radial hydrostatic bearing and said second outer surface is substantially planar such that said second polymer bearing pad acts as an axial bearing.

10. The bearing assembly as claimed in any one of claims 1 to 9, wherein said polymer bearing pad is removably mounted to said base.

11. A bearing assembly for supporting a journal of a grinding mill body, comprising a frame and a plurality of fluid bearings, said fluid bearings each comprising a polymer bearing pad mounted to a base, said polymer bearing pad comprising an outer surface, at least one recess for receiving lubricating fluid from at least one passage of said base and distributing said lubricating fluid to said outer surface and mounting means for securely mounting said polymer bearing pad to said base, said base also comprising at least one lubricating fluid supply port in fluid communication with said at least one passage, wherein said base is fixedly mounted to said frame.

12. The bearing assembly as claimed in claim 11, wherein said mounting element comprises a mounting portion extending from said polymer bearing pad, said mounting element comprising a protrusion from a mounting surface opposite to said outer surface for engaging a flange of said base, said flange being located at an outer edge of said base.

13. The bearing assembly as claimed in claim 11 or 12, wherein said mounting element comprises at least one opening for receiving at least one fastener for mounting said polymer pad to said base; said at least one recess comprises a locking tab for retaining a head portion of said fastener within said at least one

recess and said at least one fastener comprising a bore for conveying lubricating fluid from said at least one passage to said at least one recess.

14. The bearing assembly as claimed in any one of claims 11 to 13, wherein said mounting element comprises at least one opening for receiving at least one fastener for mounting said polymer pad to said base, said bearing assembly comprising a locking element for retaining said at least one fastener within said at least one recess.

15. The bearing assembly as claimed in any one of claims 11 to 14, wherein said polymer bearing pad substantially covers an outer surface of said base to create a fluid seal between said polymer bearing pad and said base.

16. The bearing assembly as claimed in any one of claims 11 to 15, comprising a chamfer at an outer edge for retaining lubricating fluid at said outer edge and transferring said lubricating fluid to a journal, wherein said chamfer has an outer edge that is displaced from a journal when said journal engages said polymer pad.

17. The bearing assembly as claimed in any one of claims 11 to 16, wherein said at least one recess of said polymer bearing pad comprises at least one interconnecting passage for fluidly connecting said at least one recess to said at least one passage of said base.

18. The bearing assembly as claimed in any one of claims 11 to 17, comprising a plurality of said polymer bearing pads, wherein said respective outer surfaces of said polymer pads form a substantially uniform bearing surface for said journal, wherein each of said polymer bearing pads comprises at least one lateral connecting portion for mutual engagement with a corresponding lateral connecting portion of an adjacent polymer bearing pad.

19. The bearing assembly as claimed in any one of claims 11 to 17, wherein said base comprises a first surface, a second surface, a plurality of said at least

one passages and a plurality of said at least one lubricating fluid supply ports, wherein said at least one passages are in fluid communication with said at least one lubricating fluid supply ports, said first surface and said second surface, and

wherein there is a plurality of said polymer bearing pads, a first of said polymer bearing pads being mountable to said first surface and a second of said polymer bearing pads being mountable to said second surface.

wherein said first polymer bearing pad comprises a first outer surface and at least one recess for receiving lubricating fluid from at least one of said plurality of passages and distributing said lubricating fluid to said first outer surface, and said second polymer bearing pad comprises a second outer surface and at least one recess for receiving lubricating fluid at least one of said plurality of passages and distributing said lubricating fluid to said second outer surface,

wherein said first outer surface is partially curved such that said first polymer bearing pad acts as a radial hydrostatic bearing and said second outer surface is substantially planar such that said second polymer bearing pad acts as an axial bearing.

20. The bearing assembly as claimed in any one of claims 11 to 19, wherein said polymer bearing pad is removably mounted to said base.

21. A multidirectional fluid bearing for a journal, comprising:

a base having a first surface orthogonal to a second surface, one or more lubricating fluid supply ports and a plurality of passages in fluid communication with said lubricating fluid supply ports, said first surface and said second surface,

a first polymer bearing pad mountable to said first surface, said polymer bearing pad having a first outer surface and at least one recess for receiving lubricating fluid from at least one of said plurality of passages and distributing said lubricating fluid to said first outer surface, and

a second polymer bearing pad mountable to said second surface, said second polymer bearing pad having a second outer surface and at least one recess for receiving lubricating fluid at least one of said plurality of passages and distributing said lubricating fluid to said second outer surface,

wherein at least one of said first and second polymer bearing pads comprises at least one opening for receiving at least one fastener for mounting said at least one polymer bearing pad to said base, wherein said at least one recess comprises a locking tab for retaining a head portion of said fastener within said at least one recess, said head portion being tapered to facilitate retention of said at least one fastener within said at least one recess by said locking tab, and wherein said at least one fastener comprises a bore for conveying lubricating fluid from said at least one passage to said at least one recess, said at least one fastener being partially received in said at least one passage.

22. The multidirectional fluid bearing as claimed in claim 21, said first polymer bearing pad substantially covers said first surface and said second polymer bearing pad substantially covers said second surface to respectively create fluid seals between said first and second polymer bearing pads and said base.

23. The multidirectional fluid bearing as claimed in claim 21 or 0, wherein at least one of said first and second polymer bearing pads comprises a chamfer at an outer edge for retaining lubricating fluid at said outer edge and transferring said lubricating fluid to a journal, wherein said chamfer has an outer edge that is displaced from a journal when said journal engages said at least one polymer bearing pad.

24. The multidirectional fluid bearing as claimed in any one of claims 21 to 23, wherein there is a plurality of at least one of said first and second polymer bearing pads, wherein said respective outer surfaces of said plurality of at least one of said first and second polymer pads form a substantially uniform bearing surface for said journal, wherein each of said plurality of at least one of said first and second polymer bearing pads comprises at least one lateral connecting portion for mutual engagement with a corresponding lateral connecting portion of an adjacent polymer bearing pad.

25. The multidirectional fluid bearing as claimed in any one of claims 21 to 24, wherein base comprises at least one flange for engagement with a mounting portion of at least one of said first and second polymer bearing pads to securely mount said at least one polymer bearing pad to said base, said flange is located at an outer edge of said base.

26. The multidirectional fluid bearing as claimed in any one of claims 21 to 25, wherein said first outer surface is partially curved such that said first polymer bearing pad acts as a radial hydrostatic bearing and said second outer surface is substantially planar such that said second polymer bearing pad acts as an axial bearing.

Dated this 8th day of December 2014

Sujit Kumar Gue
Regn. No. IN/PA-892
of D. P. AHUJA & CO.
Applicant's Agent

AMENDED 1

2853/KOLNP/2014

ABSTRACT

IMPROVEMENTS IN FLUID BEARINGS

A bearing assembly for supporting a journal of a grinding mill body, comprising a frame and a plurality of fluid bearings, said fluid bearings each comprising a polymer bearing pad mounted to a base, said polymer bearing pad comprising an outer surface, at least one recess for receiving lubricating fluid from at least one passage of said base and distributing said lubricating fluid to said outer surface and mounting element for securely mounting said polymer bearing pad to said base, said base also comprising at least one lubricating fluid supply port in fluid communication with said at least one passage, wherein said base is mounted to said frame so that said fluid bearings self adjust to changes in the angular position of the journal during operation of said grinding mill body.

Fig. 6