

Description

TECHNICAL FIELD

[0001] The present invention relates to a means for facilitating dismantling of a bearing having an inner bearing ring and an outer bearing ring and a dismantling method for a row of bearings mounted on an axle.

BACKGROUND OF THE INVENTION

[0002] In most bearing arrangements the radial clearance between the outer bearing ring of a bearing and the housing surrounding the bearing is so small that it is difficult to insert a gripping part of a dismantling tool into this clearance and to get access to the inner side of the bearing. One is therefore in many cases bound to take a large portion of the housing apart in order to be able to dismantle the bearing. Such a procedure is time consuming and thereby cost ineffective, especially if the bearings have large dimensions. The problem of small radial clearance is more accentuated if a row of bearings are to be dismantled. In such a dismantling process the gripping part of a dismantling tool must be inserted past all the bearings in the row of bearings since a gripping surface is only available on the last bearing in the row. Furthermore, even if the inserting of the gripping part of the tool succeeds, it is a great risk that the attack force of the dismantling tool will make the bearings jam in the same way that a drawer is jammed when a misaligned force is applied.

[0003] The object of the present invention is to solve the above mentioned problems.

SUMMARY OF THE INVENTION

[0004] This object is achieved by a means for facilitating dismantling of a bearing having an inner bearing ring and an outer bearing ring, characterised by an annular body having a first axial end attached to an end surface of the inner bearing ring and comprising means for co-operation with a dismantling tool.

[0005] In a preferred embodiment the first end of the annular body is adhesively attached to an end surface of the inner bearing ring and the means for co-operating with a dismantling tool comprises a row of radially directed holes in the annular body or/and a peripheral groove. The annular body can comprise several different means for co-operation with different dismantling tools.

[0006] The present invention is also related to a method of dismantling a row of at least two bearings having inner bearing rings mounted on an axle and outer bearing rings, characterised by the following steps,

attaching a first end of an annular body comprising means for co-operation with a dismantling tool, to

the free axial end of the inner bearing ring of a first bearing in the row of bearings, said first bearing being adjacent to an easily dismountable part of a housing for the row of bearings,

connecting a dismantling tool to said means for co-operation therewith disposed on the annular body, dismantling the bearing to which the annular body is attached with the help of the dismantling tool, and thereafter dismantling the rest of the bearings in the row.

[0007] In a preferred embodiment, the attaching of the annular body to the first bearing in the row of bearings is made in connection with the dismantling of the bearings after removal of the easily dismountable part of the housing. Alternatively the attaching of the annular body to the first bearing in the row of bearings takes place before use of the bearings. In a variant, an annular body is successively attached to the end surface of every bearing in the row of bearings after removal of the bearing adjacent thereto and the easily dismountable part of the housing

BRIEF DESCRIPTION OF THE DRAWING

[0008] The present invention will now be described with reference the enclosed Figures, of which;

Fig 1 shows in a sectional view a bearing arrangement comprising a row of bearings, and

Fig. 2 shows the bearing arrangement of Figure 1 in a similar view with portions of the housings removed and provided with an embodiment of an annular body according to the invention.

DESCRIPTION OF AN EMBODIMENT

[0009] The bearing arrangement disclosed in Figure 1 comprises a row of three angular contact ball bearings 1,2,3 and a cylindrical roller bearing 4. The inner bearing rings 5,6,7,8 of the respective bearing 1-4 have interference fits with an axle A and the outer bearing ring 9 of the cylindrical roller bearing 4 has an interference fit with the surrounding housing 10. The housing 10 can be opened from the outside by removing portions 11 and 12. The inside of the housing is to the left in the Figure and the housing can be split at 13 if desired. A spring loaded ring 14 is axially pressing against the free axial end surface of the outer bearing ring 15 of first bearing 1 in the row of bearings.

[0010] The bearing arrangement is sealed to the outside with suitable sealing arrangements.

[0011] In Figure 2, the bearing arrangement of Figure 1 is shown with portions 11,12 removed. Furthermore, according to the invention an annular body 18 has been attached to the inner bearing ring 5 of the first bearing 1 in the row of bearings. The annular body comprises

means for co-operating with a dismantling tool (not shown) in the form of radially directed holes, such as at 19 in Figure 1, peripheral grooves or the like in order to permit gripping parts of a simple construction of a dismantling tool to be applied in a simple way. The annular body 18 can be provided with several different types of means that can co-operate with tools of different constructions.

[0012] The annular body is adhesively attached to the free axial end of the inner bearing ring 5 of the first bearing 1 in the row of bearings. Since the adhesive connection between the inner bearing ring 5 and the annular body 18 will only be subjected to axial forces only during the dismantling of the bearing 1, the joint between the bearing ring 5 and the annular body 18 can withstand a very large dismantling force.

[0013] The annular body 18 is preferably made of steel but other materials such as light metal or brass could also be used. There is a lot of quick setting adhesives available on the market that is suitable for attaching the annular body 18 to the bearing ring 5, for example can Loctite® 496 from Loctite Corp., USA be used.

[0014] The bearing arrangement disclosed in Figure 1 is dismantled in the following way.

[0015] To begin with, the easily dismountable portions 11 and 12 of the housing 10 is removed together with the springloaded ring 14 and the sealing devices sealing the inner of the housing 10 against the environment is removed. Thereafter, the annular body 18 is attached to the inner bearing ring 5 of the first bearing 1 with the help of a quick setting adhesive. Then the gripping means of a dismantling tool is inserted into the co-operating means in the annular body 18, for example the holes 19, and the annular body and thereby the bearing 1 is subjected to an outwardly directed axial force by actioning of the dismantling tool. The first bearing 1 in the row of bearings 1-4 is thereby taken off the axle A.

[0016] After the removal of bearing 1, the remaining bearings can be dismantled by the help of conventional tools without difficulty.

[0017] Alternatively, an new annular body 18 can be adhesively attached to the second bearing 2 and this bearing can be removed in the same way as the first bearing 1, whereafter the remaining bearings successively are removed in the same way.

[0018] In another embodiment of the invention the annular body 18 is attached to bearing 1 before this bearing is mounted on the axle A and thus before the bearing arrangement is sealed by the mounting of portions 11, 12 of the housing. The annular body 18 is thus in this embodiment attached to the bearing 1 during the whole operation of the bearing arrangement.

[0019] The described embodiment can be modified in several ways within the scope of the invention, especially regarding the construction of the bearing arrangement and its housing. Furthermore, the annular body need not have a smooth peripheral surface, as in the disclosed embodiment, but can have projections or the like protruding from the periphery thereof in order to co-operate with a dismantling tool. Such projections are preferably distributed regularly around the periphery. The scope of the invention should therefore only be restricted by the content of the enclosed patent Claims.

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Claims

1. A means for facilitating dismantling of a bearing (1) having an inner bearing ring (5) and an outer bearing ring (15), **characterised by** an annular body (18) having a first axial end attached to an end surface of the inner bearing ring (5) and comprising means (19) for co-operation with a dismantling tool.
2. The means according to Claim 1, **characterised in** that the first end of the annular body (18) is adhesively attached to an end surface of the inner bearing ring (5).
3. The means according to Claim 1 or 2, **characterised in** that the means (19) for co-operating with a dismantling tool comprises a row of radially directed holes in the annular body (18).
4. The means according to Claim 1 or 2, **characterised in** that the means for co-operation with a dismantling tool comprises a peripheral groove.
5. The means according to any one of Claims 1-4, **characterised in** that the annular body comprises several different means for co-operation with different dismantling tools.
6. A method of dismantling a row of at least two bearings (1-4) having inner bearing rings (5-8) mounted on an axle and outer bearing rings (15-17, 9), **characterised by** the following steps,
 - attaching a first end of an annular body (18) comprising means (19) for co-operation with a dismantling tool, to the free axial end of the inner bearing ring (5) of a first bearing (1) in the row of bearings, said first bearing (1) being adjacent to an easily dismountable portions (11, 12) of a housing (10) for the row of bearings, connecting a dismantling tool to said means (19) for co-operation therewith disposed on the annular body (18),
 - dismantling the bearing (1) to which the annular body is attached with the help of the dismantling tool, and thereafter dismantling the rest (2-4) of the bearings in the row.
7. The method according to Claim 6, **characterised in** that the attaching of the annular body (18) to the first bearing (1) in the row of bearings is made in

connection with the dismantling of the bearings after removal of the easily dismountable portions (11,12) of the housing (10).

8. The method according to Claim 6, **characterised** 5
in that the attaching of the annular body (18) to the first bearing (1) in the row of bearings takes place before use of the bearings.
9. The method according to Claim 6, **characterised** 10
in that an annular body (18) being successively attached to the end surface of every bearing in the row of bearings after removal of the bearing adjacent thereto and the easily dismountable part of the housing. 15

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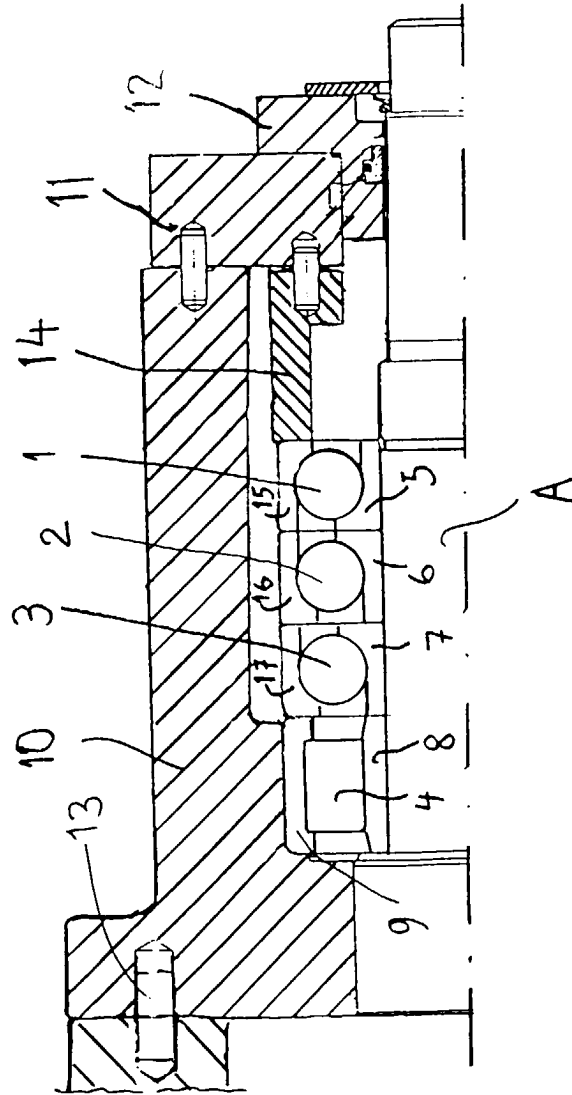


FIG. 1

