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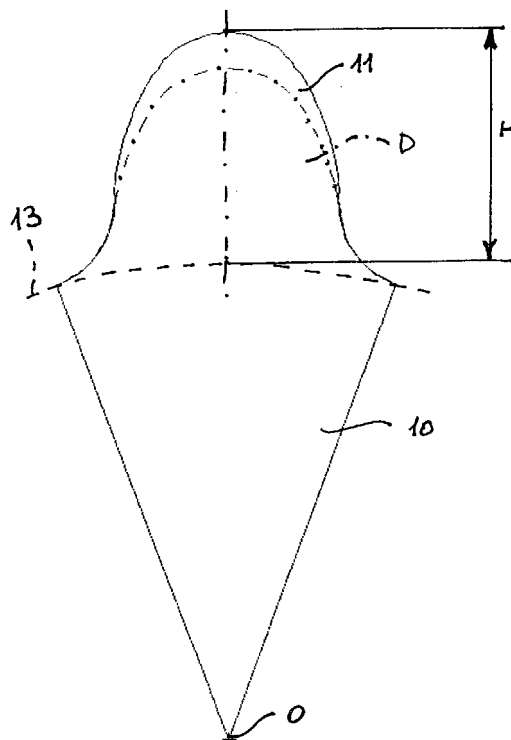
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(54) **Gear for an hydraulic gear machine**

(57) A hydraulic gear apparatus comprises a pair of gears which mesh with each other with semi-encapsulation. Each gear has a plurality of teeth having a profile which falls within a tolerance band of $\pm 1/15$, more preferably $\pm 1/20$, and even more preferably $\pm 1/30$ with respect to the height of the tooth, with respect to a profile homothetic to a profile defined by a predetermined spline function passing through a plurality of node points having predetermined coordinates $\{X,Y\}$ with their origin on the axis of rotation.



**DECLARATION**

Application Number

which under Rule 63 of the European Patent Convention EP 10 18 9404 shall be considered, for the purposes of subsequent proceedings, as the European search report

<p>The Search Division considers that the present application, does not comply with the provisions of the EPC to such an extent that it is not possible to carry out a meaningful search into the state of the art on the basis of all claims</p>	<p>CLASSIFICATION OF THE APPLICATION (IPC)</p>	
<p>Reason:</p>	<p>INV. F04C2/14</p>	
<p>The subject-matter of the claims is unclear (Article 84 EPC) and not sufficiently disclosed by the description (Article 83 EPC) to such an extent that a meaningful search is not possible. The way the applicant has chosen to define his invention makes impossible to determine the scope of the search.</p> <p>The subject-matter of claim 1 defines the shape of a tooth profile by using an undefined spline function passing through any combination of nodal points listed in a numeric coordinate table. This defines an infinite number of tooth profiles among the vast number of permutations of nodal points and the infinite number of spline functions that pass through each combination.</p> <p>The scope of the claim is so broad that it is very likely that all existing gear wheels fall within the scope of the claim, therefore a meaningful search of the subject-matter of claim 1 is not possible.</p> <p>When the reader refers to the description to clarify the shape of the tooth profile, he finds that it does not provide a clear definition neither.</p> <p>The statement in page 5, 2nd paragraph, "spline function" refers to a "smoothing spline having a sufficiently small smoothing parameter not to introduce significant errors with respect to the node points" introduces an unknown "smoothing" parameter to define the spline function rendering the definition of the</p> <p style="text-align: center;">-/--</p>		
<p>Place of search</p> <p>Munich</p>	<p>Date</p> <p>15 November 2012</p>	<p>Examiner</p> <p>Alquezar Getan, M</p>

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EPO FORM 1504 (P04F37)

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<p>The Search Division considers that the present application, does not comply with the provisions of the EPC to such an extent that it is not possible to carry out a meaningful search into the state of the art on the basis of all claims</p> <p>Reason:</p> <p>spline function even more undefined.</p> <p>The statements in page 5, 3rd paragraph, "the choice of the type of the spline is nevertheless not binding" and "the person skilled in the art may find it more convenient to use different spline functions, or also smoothing splines, also because some of those spline functions are normally present and used in CAD and CAD-CAM systems" implies that the tooth profile may even vary if the skilled person in the art uses one or another CAD program to design it. The successful performance of the invention may be dependent on chance.</p> <p>Moreover the description makes clear in page 5 that the preferred function is a third-degree spline function which do not pass through all the points in the tables, that some of the points may be left out at wish, however it does not provide any criterion to decide which points have to be used and which not and it does not disclose which error margin is acceptable.</p> <p>For these reasons the examiner cannot identify in the description any particular tooth profile that the applicant seems to be interested in and which helps to define the scope of the search. Thus, a meaningful partial search based on a part of claim 1 in the light of the description is not possible.</p> <p>The subject-matter of dependent claims 2 to 12 contains also the undefined tooth profile, being the tooth profile an</p> <p style="text-align: center;">-/--</p>	<p>CLASSIFICATION OF THE APPLICATION (IPC)</p>	
<p>Place of search</p> <p>Munich</p>	<p>Date</p> <p>15 November 2012</p>	<p>Examiner</p> <p>Alquezar Getan, M</p>

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<p>Reason:</p>	<p>essential feature of the invention, a meaningful search of the subject-matter of the dependent claims excluding the tooth profile seems not possible.</p> <p>Following the indications sent by the applicant in his reply letter according to Rule 63(1) EPC, the application contains an example in description page 5 line 12 and in page 6 line 15, wherein a cubic spline function is used.</p> <p>However, there is no indication through which points it has to pass through. A third degree spline function is defined by three nodal points, therefore picking up three points from the table will already define a spline passing through that three nodal points but not through the others. Thus, there are still a vast number of cubic spline profiles only based on the permutations of three points among the 49 nodal points given in table 1.</p> <p>Even if taking only two points or one point and to approximate a cubic spline function close to the others, the amount the profile can deviate from the non-chosen points is, as explained above, defined by an undefined "smoothing parameter" without setting any limits. Although the applicant states in his letter that its comparable to the machining tolerances, it is not disclosed in the description. During the design process its up to the skilled man to define which deviation is reasonable, however without knowing beforehand the alleged invention he won't be able to</p> <p style="text-align: center;">-/--</p>		
5	Place of search	Date	Examiner
Munich	15 November 2012	Alquezar Getan, M	

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<p>The Search Division considers that the present application, does not comply with the provisions of the EPC to such an extent that it is not possible to carry out a meaningful search into the state of the art on the basis of all claims</p> <p>Reason:</p> <p>determine which profiles are within a valid deviation and which are not in order to obtain the alleged advantages of the application.</p> <p>Thus, even using only a natural cubic spline function as indicated by the applicant there are a vast number of tooth profiles defined by each one of the table 1, table 2, table 3 and table 4. These different possibilities cannot be considered to reach the same final result with small deviations comparable to manufacture tolerances as stated by the applicant in his reply letter. Even in the application description (see page 4 lines 19-28) the alleged invention is referred to as a "range of tooth profiles" or as a "series of profiles" which leads out of considering them to be the same.</p> <p>For all the above, it is impossible to determine the scope of the search.</p> <p>The applicant's attention is drawn to the fact that a search may be carried out during examination following a declaration of no search under Rule 63 EPC, should the problems which led to the declaration being issued be overcome (see EPC Guideline C-VI, 8.2).</p>	<p>CLASSIFICATION OF THE APPLICATION (IPC)</p>	
<p>Place of search</p> <p>Munich</p>	<p>Date</p> <p>15 November 2012</p>	<p>Examiner</p> <p>Alquezar Getan, M</p>

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