

COMMISSIONER'S DECISION

OBVIOUSNESS: Roller Conveyor Bearing Lubrication

Support Bracket Accessibility to change the lubrication tube between adjacent rollers is novel. The prior art requires dismantling of rollers to reach this tube.

Final Action: Modified - suggested amendment for an allowable claim.

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The Final Rejection of application no. 164,325 of Francois Bertaud assigned to Borg-Warner Corporation was referred to the Patent Appeal Board for consideration. A Hearing was conducted on May 25, 1977 at which Mr. W. Rock represented the applicant.

Briefly the invention is for a bearing lubrication arrangement for a roller conveyor. The configuration of the rollers is well known where there is a single horizontal central roller bearingly mounted on a hollow shaft, which shaft is supported at each end on a bracket, and a pair of upwardly and outwardly sloping rollers one at each end of the central roller. Figure 1 shows the roller arrangement and Figure 2 details the bearing lubrication passage between adjacent rollers.

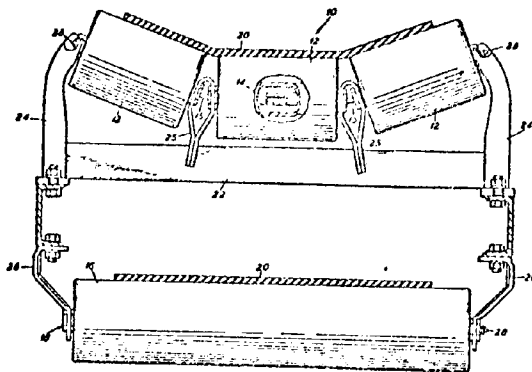


Fig. 1

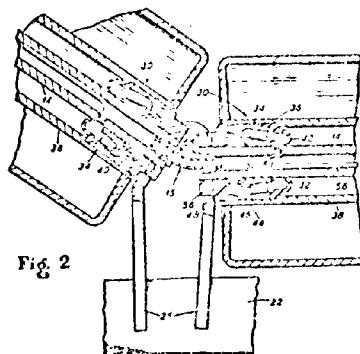


Fig. 2

In the Final Action the examiner refused the claim and application for failing to define patentable subject matter over the following references.

Canadian Patents

416,012	Oct. 26, 1943	Lemmon et al
645,499	July 24, 1962	Franck
764,851	Aug. 8, 1967	Anderson
803,394	Jan. 7, 1969	Nicolous

United States Patent

2,139,293	June 30, 1964	Franck
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In response to the Final Action the applicant cancelled the refused claim and replaced it with an amended claim. As this claim differs significantly from the claim existing at the date of the Final Action we will not present a résumé of that action.

In support of the allowance of the amended claim the applicant presented his position (in part) as follows:

...

The newly proposed claim better defines applicant's invention by reciting structural features facilitating insertion of the flexible tube into adjacent ends of hollow roller shafts. This feature is described in the specification on page 8, lines 20-27.

...

Newly proposed claim 1 contains an additional definitive clause at the end thereof highlighting a further feature of applicant's invention. During initial installation or during replacement with the roller assemblies in place, one end of the flexible tube can be inserted through the loosely threaded fitting into one hollow shaft a sufficient distance to permit the other end of the flexible tube to be brought into registration with and moved through the loosely installed fitting in the adjacent hollow shaft and into the interior of the latter. The prior art does not suggest or permit this.

Canadian patents 645,499, 764,851, and 803,394 and U.S. patent 3,139,293 all relate to tube fittings, but do not show end-to-end roller supporting shafts. Canadian patent 416,012 shows end-to-end shafts for supporting rollers; however, there is no way to insert a flexible tube into the hollow shafts by way of the axial space between the shafts. Thus the lubrication tube would need to be inserted at the time the shafts are mounted in the support brackets and the shafts would need to be removed from the support brackets if there is need to replace a defective tube. Even if the bracket 13 of Canadian 416,012 did not obstruct the axial space between the shafts 21,22, there is insufficient axial space between the shaft ends to permit a flexible tube and fittings to be installed with the shafts in place on the bracket.

The single proposed claim is believed to clearly define an inventive, patentable combination. Claim 1 defines "bracket means supporting said hollow shafts in axially spaced relation to one another a predetermined distance and the interior of said hollow shafts being so dimensioned as to permit one end of said tube to be inserted axially into one of said hollow shafts by way of the axial space between said shafts a sufficient distance to permit the other end of said tube to be moved into the interior of the adjacent hollow shaft upon shifting of said tube in the opposite axial direction."

The issue before us is whether the applicant has made a patentable advance in the art. Amended claim 1 reads as follows:

In an idler assembly for belt conveyors and the like having at least a pair of idlers in end-to-end relationship, each idler being rotatably mounted on a hollow shaft by spaced bearing assemblies and having means communicating each bearing assembly with the interior of the shaft, each bearing assembly being lubricated by forcing lubricant through the shafts and through the communicating means into the bearing assemblies, the adjacent ends of the idler shafts being joined together, the improvement comprising:

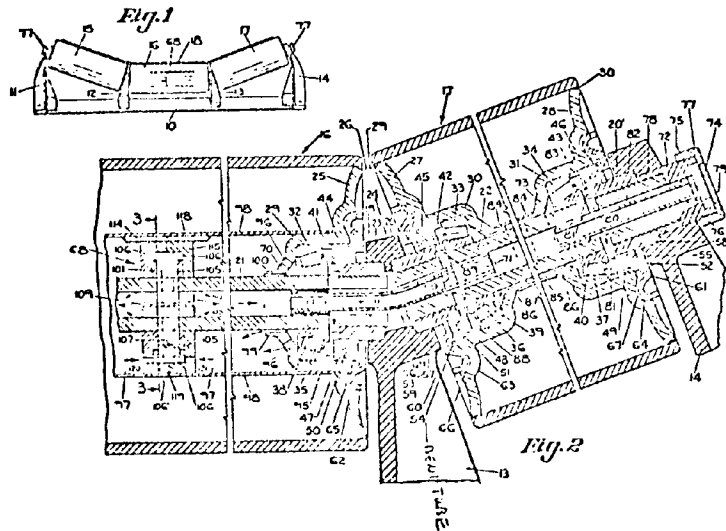
a counterbore in each of said adjacent ends of said shafts,  
internal threads in each of said counterbores,

a seat within each of said adjacent ends of said hollow shafts at the axially inner end of said counterbores,

a unitary flexible tube joining the shafts together, with the outer diameter of said flexible tube being smaller than the inner diameter of said hollow shaft, and

a pair of fittings on opposite ends, respectively, of said flexible tube having external threads in threaded engagement with said internal threads in said adjacent ends of said shaft and deformable end portions which are crimped into sealing engagement with said flexible tube by being forced against the seats as said fittings are threaded into said adjacent ends of said shafts, whereby said deformable portion effects a fluid tight seal between said tube and said shafts.

At the Hearing the primary reference to Lemmon was discussed at length. This reference relates to the lubrication of a conveyor roller. Figures 1 and 2 (below) show the details of this patent.



Mr. Rock stressed that the applicant's mounting bracket between adjacent rollers permits accessibility to the lubrication tube (15) which allows for replacement without dismantling of the roller assembly. The examiner agreed that this feature is not shown in the prior art. He stated that he was prepared to allow a claim which includes that feature when claimed in a distinctive manner. We are satisfied that there is no teaching of this feature in the cited references and that this feature, when clearly stated in combination, is in our view directed to a patentable advance in the art.

In discussing amended claim 1 at the Hearing the examiner pointed out that the portion of the claim relating to the support bracket did not clearly differentiate over the Lemmon citation. Mr. Rock did not disagree on this point and indicated a willingness to include the accessibility feature of his support bracket in the claim. It is recommended that an acceptable claim

should include the bracketted statements as indicated below:

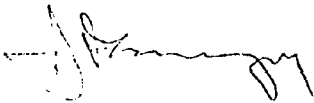
... bracket means supporting [the adjacent ends of] said hollow shafts in axially spaced relation to one another a predetermined distance, [said bracket means having an opening which permits access to the axial space between the shafts], and the interior of said hollow shaft being so dimensioned....

In summary, we recommend that the decision in the Final Action to refuse the claim (on file at that time) be affirmed, but that the decision to refuse the application be withdrawn. We also recommend that an amended claim drawn along the guide lines set out above be accepted.



J.F. Hughes  
Acting Chairman  
Patent Appeal Board, Canada

I have studied the prosecution of the application and have reviewed the recommendation of the Patent Appeal Board. I withdraw the Final Action as it pertains to the refusal of the application. I will accept a claim when amended as indicated by the Board. The applicant has six months within which to cancel the claim under consideration, submit an amended claim, or to appeal this decision under the provision of Section 44 of the Patent Act.



J.H.A. Gariopy  
Commissioner of Patents

Dated at Hull, Quebec

this 30th. day of May, 1977

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