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Aktenzeichen / Case Number / N° du recours : T 188/87 - 3.2.2

Anmeldenummer / Filing No / N° de la demande : 81 300 134.4

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Bezeichnung der Erfindung: Apparatus for intermittently feeding a workpiece
Title of invention: to a machine
Titre de l'invention :

Klassifikation / Classification / Classement : B21B 43/08, F16H 29/04, B 65H 5/06

ENTSCHEIDUNG / DECISION

vom / of / du 23 February 1989

Anmelder / Applicant / Demandeur : Vamco Machine and Tool Inc.

Patentinhaber / Proprietor of the patent /
Titulaire du brevet :

Einsprechender / Opponent / Opposant :

Stichwort / Headword / Référence :

EPÜ / EPC / CBE Art. 56

Schlagwort / Keyword / Mot clé : "inventive step - yes"

Leitsatz / Headnote / Sommaire

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Beschwerdekammern

Boards of Appeal

Chambres de recours

Case Number : T 188/87 - 3.2.2



D E C I S I O N
of the Technical Board of Appeal 3.2.2
of 23 February 1989

Appellant : Vamco Machine and Tool Inc.
555 Epsilon Drive
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Representative : R. Topps
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Decision under appeal : Decision of Examining Division 090 of the European Patent Office dated 3 December 1986 refusing European patent application No. 81 300 134.4 pursuant to Article 97(1) EPC

Composition of the Board :

Chairman : H. Seidenschwarz

Members : C. Andries

W. Moser

Summary of Facts and Submissions

- I. European patent application No. 81 300 134.4 filed on 13 January 1981 (publication No. 0032 453) was refused by a decision of the Examining Division 090 dated 3 December 1986.
- II. The reason given for the refusal was that the subject-matter of Claims 1 to 6 did not involve an inventive step in view of the prior art disclosed in
- D1: US-A-3 758 011
D3: US-A-3 456 859 (= DE-B-1 752 276)
D4: DE-B-1 502 853 (= US-A-3 266 357)
D5: US-A-4 138 913
D6: DE-B-1 248 409
- III. By telex dated 29 January 1987 and duly confirmed by letter received on 3 February 1987, the Appellant filed notice of appeal against this decision. Subsequently, the Appellant completed his notice of appeal by telex dated 2 February 1987 which was duly confirmed by letter received on 6 February 1987. The prescribed fee was paid on 30 January 1987. The statement of grounds was submitted on 29 March 1987.
- The Appellant requests that the decision under appeal should be set aside.
- IV. During the oral proceedings held on 23 February 1989, the Appellant filed new Claims 1 to 23 and new pages 1, 2, 2a and 3 to 33 of the description. He maintained his request and additionally requested the grant of a patent on the basis of these new filed claims and description and on the basis of the published drawings. He furthermore defined

the problem to be solved with respect to the closest prior art as disclosed in document D1.

- V. The valid Claim 1, which is the only independent claim, reads as follows:

"Apparatus for intermittently feeding a workpiece to a machine comprising an input shaft (14, 270), an output shaft (28, 302) and feed rolls (16, 17) for intermittently feeding a preselected length of the workpiece in a selected direction, said input shaft (14, 270) being continuously rotatable at a preselected speed, a drive mechanism drivingly connecting the input shaft (14, 270) to the output shaft (28, 302) for generating oscillating rotational movement of said output shaft (28, 302) through a preselected angle of rotation, and a means drivingly connecting the output shaft (28, 302) to the feed rolls (16, 17) and being operable to transmit the oscillating rotational movement of the output shaft (28, 302) to said feed rolls (16, 17) to oscillate the feed rolls (16, 17) through a preselected angle of rotation and to intermittently advance a preselected length of the workpiece corresponding to the angle of rotation of said feed rolls (16, 17), characterised in that the drive mechanism drivingly connecting the input shaft (14, 270) to the output shaft (28, 302) comprises a cam drive means (18, 300), the cam (20) or the cams (312, 314) of said cam drive means (18, 300) providing a dwell period at each end of each oscillation so that output shaft (28, 302) and feed rolls (16, 17) dwell at the end of each feed and before the subsequent feed, and said means for drivingly connecting the output shaft (28, 302) to the feed rolls (16, 17) comprises an adjustable rotation transmission means (42, 310) having a transfer arm member (44, 308) secured to said output shaft (28, 302) and a drive link (48, 334) having one end (88, 364) connected via a drive connection (90, 370) to said feed rolls (16, 17) and its

other end (82, 362) connected to said transfer arm member (44, 308) by slide means (46, 332) adjustably movable along the transfer arm member from adjacent the axis of rotation of the output shaft (28, 302) to any desired position to provide a preselected angular displacement of the drive link (48, 334) and enable the length of intermittent feed of workpiece to be adjusted to any desired feed length."

Reasons for the Decision

1. The appeal is admissible.
2. There are no formal objections to the present claims since they are adequately supported by the original disclosure (Art. 123(2) EPC), and since Claim 1 is in a proper two-part form with respect to the closest prior art as disclosed in document D1 (Rule 29(1) EPC).

The amendments in the description relate, apart from the correction of clerical errors, only to a more precise description of the state of the art, a clearer definition of the technical problem to be solved and an adaptation of the description to the newly filed Claim 1. Thus these amendments do not give rise to any objection.

3. Novelty

After examination of the cited documents, the Board is satisfied that none of them discloses an apparatus having all the features as defined in Claim 1.

Since this has never been disputed, there is no need for further detailed substantiation of this matter.

Therefore, the subject-matter as set forth in Claim 1 is to be considered novel within the meaning of Article 54 EPC.

4. Inventive step

- 4.1 According to the pre-characterising portion of Claim 1, the application relates to an apparatus having a continuously rotating input (input shaft) and an oscillating output (feed rolls) for intermittently feeding a workpiece to a machine. Such an apparatus, is already known from document D1.

The apparatuses disclosed in documents D3 and D4 are different in so far as they do not comprise the combination of a continuously rotating input and an oscillating output. Thus, contrary to the opinion expressed by the Examining Division the Board takes the view that the apparatus disclosed in document D1 represents the closest prior art.

- 4.2 In the apparatus according to document D1, the drive mechanism drivingly connecting the output shaft to the input shaft comprises an adjustable lever-type crank drive, and the means drivingly connecting the output shaft to the feed rolls comprises a gear drive and a drive coupling.

The provision of a complicated lever-type crank drive to convert a continuous rotational movement of the input shaft to an oscillating movement of the output shaft limits the speed of operation of this apparatus in view of the inertia incurred in that movement transformation mechanism. Furthermore, it is not possible with such an adjustment mechanism to precisely adjust the feed length from about zero to any desired feed length.

- 4.3 The technical problem to be solved consists therefore in providing an apparatus operating at a high speed with an adjustable rotation transmission which enables the feed lengths to be precisely adjusted in a wide range.
- 4.4 The Board is satisfied that this problem is solved by the provision of the technical features mentioned in Claim 1.
- 4.5 A person skilled in the art, starting from an apparatus according to document D1, who would try to obtain an apparatus solving the above mentioned problem could not find, however, an indication in the cited documents to use such a specific movement transformation and feed length adjusting mechanism as defined in Claim 1 of the present application.
- 4.5.1 Document D3 discloses a device for feeding strip material, comprising a cam (180) to transform an intermittent rotating input (166) into an oscillating movement of a shaft (218; column 6, lines 10 and 11) and an adjustable linkage, including a rack (260), to transform that oscillating movement into an intermittent rotating movement of the feed rolls (22, 24).

This document teaches that it is possible to obtain a rapid feeding and an easily adjustable mechanism. It is indicated in this document that the rapid feeding is obtained by avoiding the time needed to retract the rack. Such a teaching implies for a person skilled in the art that not only the unused time during rack retraction should be avoided but also that oscillating feed rolls cannot be used. Document D3 therefore gives no hint to solve the above mentioned problem (cf. point 4.3 above), which is linked to an apparatus having oscillating feed rolls. On the contrary, this document indicates to use another type of apparatus (no oscillating feed rolls). Even if a person skilled in the art were aware of the

usefulness of a cam in view of transforming a rotational movement into an oscillating movement, he would not find in document D3 an adjustment mechanism according to Claim 1 of the present application. Indeed, although the adjustable linkage according to document D3 comprises a transfer arm member (210, 240, 242, 282), a drive link (254, 260) and a drive connection to said feed rolls, it does not comprise either a drive link having one end connected to said drive connection or a slide means adjustably movable along said transfer arm member from adjacent the axis of rotation (232) of shaft (218).

- 4.5.2 Document D4 discloses a combination of a feeding and shearing mechanism comprising cam means to transform a rotational movement into an oscillating movement of a shaft and an adjustable linkage having a lever and rods to transform that oscillating movement of that shaft into an intermittent rotating movement of the feed rolls. In order to avoid a dwell time during retraction of the lever fixed with one of its ends to the oscillating shaft, and to increase thereby the inherent speed of the mechanism, clutch devices connected to the rods are provided which, during the movement of that lever in both oscillating directions, permit an exclusively equidirectional actuation of the feed rolls. Therefore this document teaches to avoid oscillating feed rolls.

Furthermore, the extent of the feeding action of the feed rolls can be only varied by adjusting the connection between the lever and the rods along the length of a slot at the upper end of the lever. Therefore, a person skilled in the art does not find an indication in this document to vary the feed length between about zero and any desired feed length.

Thus, document D4 does not suggest to a person skilled in the art to solve, in accordance with the solution

indicated in Claim 1 of the present application the above mentioned problem in an apparatus having oscillating feed rolls.

4.5.3 Document D5 and D6 as well as the further cited documents concern apparatuses for intermittently feeding a workpiece to a machine. These documents neither disclose the problem as indicated above nor do they disclose all the technical features present in Claim 1 which are needed to solve that problem. The Board considered these documents and found them not prejudicial to the patentability of the subject-matter of the present Claim 1, neither alone nor in combination with each other or with the documents cited above.

4.6 Thus, there is no lead in the revealed prior art to solve the above problem as set out in Claim 1. Therefore, the subject-matter of Claim 1 involves an inventive step within the meaning of Article 56 EPC.

5. Based upon the allowable Claim 1 and dependent Claims 2 to 23, which concern preferred embodiments of the apparatus according to Claim 1, and the modified description as well as the published drawings, a patent may be granted.

Order

For these reasons, it is decided that:

1. The decision of the Examining Division is set aside.
2. The case is remitted to the first instance with the order to grant the European patent based on the following documents:
 - Claims 1 to 23 as presented during the oral proceedings;
 - Description, pages 1, 2, 2a, 3 to 33 as presented during the oral proceedings;
 - Drawings: as published.

The Registrar:

The Chairman:

S. Fabiani

H. Seidenschwarz