BESCHWERDEKAMMERN DES EUROPÄISCHEN PATENTAMTS

BOARDS OF APPEAL OF THE EUROPEAN PATENT OFFICE

CHAMBRES DE RECOURS DE L'OFFICE EUROPEEN DES BREVETS

Internal distribution code:
(A) [ ] Publication in OJ
(B) [ ] To Chairmen and Members
(C) [X] To Chairmen
(D) [ ] No distribution

Datasheet for the decision of 12 December 2006

Case Number: T 0285/04 - 3.2.01

Application Number: 94909319.9

Publication Number: 0689887

IPC: B21D 43/05

Language of the proceedings: EN

Title of invention:
Transfer feeder

Patentee:
KABUSHIKI KAISHA KOMATSU SEISAKUSHO

Opponents:
Müller Weingarten AG
Umformtechnik Erfurt GmbH

Headword:
-

Relevant legal provisions:
EPC Art. 54, 56

Keyword:
"Novelty (yes)"
"Inventive step (no)"

Decisions cited:
-

Catchword:
-

Europäisches Patentamt | European Patent Office | Office européen des brevets

Beschwerdekammern | Boards of Appeal | Chambres de recours

Case Number: T 0285/04 **-** 3.2.01

D E C I S I O N
of the Technical Board of Appeal 3.2.01
of 12 December 2006

Appellant: (Patent Proprietor)
KABUSHIKI KAISHA KOMATSU SEISAKUSHO
3-6, Akasaka 2-chome
Minato-ku
Tokyo 107 (JP)

Representative:
TER MEER -STEINMEISTER & PARTNER GbR
Artur-Ladebeck-Strasse 51
D-33617 Bielefeld (DE)

Respondents:
(Opponent 01)
Müller Weingarten AG
Schussenstrasse 11
D-88250 Weingarten (DE)

Representative:
Otten, Herbert
Patentanwälte
Eisele, Otten, Roth & Dobler
Karlstrasse 8
D-88212 Ravensburg (DE)

(Opponent 02)
Umformtechnik Erfurt GmbH
Schwerborner Str. 1
D-99086 Erfurt (DE)

Decision under appeal:
Decision of the Opposition Division of the European Patent Office posted 22 December 2003 revoking European patent No. 0689887 pursuant to Article 102(1) EPC.

Composition of the Board:

Chairman: S. Crane
Members: J. Osborne
T. Karamanli

Summary of Facts and Submissions

I. The appeal is directed against the decision posted 22 December 2003 to revoke European patent No. 0 689 887.

II. The following state of the art played a role during the appeal proceedings:

D1: EP-A-0 315 381

D8: JP-A-63 273 530 and D8' translation into English.

III. The opposition division had found that the subject-matter of respective claims 1 as granted and according to a first auxiliary request was not new with respect to the disclosure of D8 whilst the subject-matter of claim 1 according to a second auxiliary request did not involve an inventive step in the light of D8 together with D1.

IV. The board summoned the parties to oral proceedings to be held 12 December 2006. In a communication pursuant to Article 11(1) RPBA the board indicated its provisional opinion that the closest state of the art for consideration of inventive step would be that acknowledged as earlier prior art in D1. It further indicated that the relevance to inventive step of a combination of this closest state of the art and the disclosure of D8 would have to be considered.

V. During the oral proceedings the appellant requested that the decision under appeal be set aside and the patent be maintained in amended form on the basis of a

sole request filed during the oral proceedings. Respondent I (opponent I) requested that the appeal be dismissed. Respondent II (opponent II) took no part in the appeal proceedings.

VI. Claim 1 according to the appellant's request reads as follows:

"A transfer feeder operable with a press machine, comprising
- a feed drive source
- a pair of lifting beams (9,41) which are so disposed as being parallel to each other and extending in a workpiece conveying direction,
- a lifting mechanism (10,42) having a lifting drive source for moving said pair of lifting beams upwards and downwards, said lifting drive source is constituted by a servo-motor that in addition to be operated isolated, is adapted to be driven concurrently with the feed drive source
- a plurality of pair of cross bar carriers (15,47) which are so arranged on said pair of lifting beams as to be spaced apart from, and connected to one another and be displaceable in said workpiece conveying direction,
- a cross bar (16,49) extending transversely across a pair of those cross bar carriers (15,47) as afore-said which are opposite to each other, and that has a workpiece attracting means (48) attached thereto, and
- a feed mechanism (20,52) having a feed drive source for moving said cross bar carriers in a feed direction, thereby displacing a workpiece on said workpiece attracting means (48) forwards and backwards by a given distance in said feed direction,

- said servomotor cooperating with said feed drive source while said feed mechanism (20,52) displaces said cross bar forwards and backwards in said feed direction so that said cross bar (16,49) may be displaced in any movement pattern as desired in dependence upon the configuration of the workpiece, thereby enabling the workpiece to be conveyed without causing any interference between the die and the workpiece, characterized in that
said lifting beams (9) being stationary in workpiece conveying direction,
said cross bar carriers (15) are interconnected by a connecting rod (17) so that they may be displaced in the feed direction at the same time with respect to the lifting beams (9),
said cross bar carriers (15) located downstream are connected via a connection rod (15) to said feed drive source."

VII. The appellant's submissions in as far as they are relevant to its final request may be summarised as follows:

The subject-matter of claim 1 is new with respect to the disclosure of D8 because that document does not disclose lifting beams which are stationary in the conveying direction of the workpiece. It is also new with respect to the disclosure of the invention according to D1 because in that document there are no lifting beams within the meaning of the present patent, namely ones which participate in the transfer motion.

If D8 is considered as the closest prior art the subject-matter of the claim solves the objective

problem of reducing the inertia of the elements involved in the reciprocating motion parallel to the conveying direction. D1 does not address this problem. It proposes that the cross-bars are mounted on trolleys which reciprocate in the conveying direction and each of which comprises a lifting mechanism. As a result, the total vertically reciprocating mass would be high so this document would not encourage the skilled person to modify the device according to D8 by providing the presently claimed arrangement. Moreover, the skilled person would receive no clear teaching from the acknowledgement in D1 of the earlier prior art as to how the cross beams serve to transport the workpieces.

If the acknowledgement in D1 of the earlier prior art is considered as the closest state of the art the subject-matter of present claim 1 differs by the feature of the servomotors. At the time of D1 cam drives were standard and the skilled person would not have received any encouragement to replace these.

VIII. Respondent I countered these points essentially as follows:

The subject-matter of present claim 1 is not new with respect to the invention disclosed in D1. In the fifth embodiment according to D1 the beams may be lifted by hydraulic cylinders and in a first modification of that embodiment those cylinders are replaced by jacks driven by motors.

The subject-matter of present claim 1 is rendered obvious by a combination of D8 when considered as the closest state of the art and the teaching of D1. The

preamble of the claim corresponds to the disclosure of D8 except for the provision of cross bar carriers which are movable relative to the lifting beams. D8 already discloses the use of servomotors for raising the lifting beams and the problem solved by the subject-matter of present claim 1 is to replace the servomotor providing motion in the workpiece conveying direction by a cam driving cross bar carriers via a connecting rod. However, this feature is known from D1 and the skilled person therefore would arrive at the subject-matter of present claim 1 in an obvious way.

If the prior art acknowledged in D1 is considered as the closest state of the art the subject-matter of present claim 1 differs only by the features relating to a servomotor. However, D8 suggests the use of mutually independent servomotors as an alternative to cam drives. The subject-matter of present claim 1 therefore would be rendered obvious also in this way.

Reasons for the Decision

1. The patent relates to a feeder device for use with a transfer press in which a workpiece undergoes a series of press operations at longitudinally spaced dies. The feeder device operates by lifting the workpiece from one die, moving it to the adjacent die and releasing it for undergoing the next press operation. Since the workpiece is pressed into a depression in each die the transfer movement involves a combination of lifting to extract the workpiece from the die and horizontal motion to feed it to the next die. The feeder device comprises two horizontal beams which extend the length

of the press and support cross bars which carry the parts which attach to the workpiece. It is explained in the specification that in conventional transfer feeders a cam drive operated from the press is used to produce the lift and feed movements but that this arrangement suffers from a lack of flexibility in adapting the device to produce different movement patterns. According to the patent the lift movement is produced by a servomotor, thereby both simplifying the drive system and increasing its flexibility in producing different movement patterns. Claim 1 leaves open which feed drive source is used but dependent claim 4 as granted specifies a servomotor also for this duty.

Novelty (Article 54 EPC)

2. D1 contains two distinct disclosures. Figures 1 to 3 and the associated text relate to a transfer feeder which was already known at the time of writing D1 (hereafter 'earlier prior art of D1'). The remainder of D1 relates to the invention according to D1.

2.1 In the earlier prior art of D1 the horizontal beams move vertically to raise and lower the cross bars. It is explained in the acknowledgement of that prior art that since those beams are long and heavy a substantial driving force is necessary to provide the vertical movement. It is stated that an object of the invention according to D1 is to make the lift component parts of a transfer device both compact and light (column 3, final paragraph). The solution to this problem is to transfer the lifting function from the beams to trolleys which travel on the beams and which are illustrated in figure 5. Each trolley comprises a

lifting device and carries a cross bar which may be raised and lowered by the lifting device.

2.2 In some embodiments according to the invention of D1 the beams are mounted low relative to the dies and have to be lifted and retracted for replacement or maintenance of the dies. In a fourth embodiment the beams are mounted in a higher position in order to avoid this need (column 15, first full paragraph). In a fifth embodiment shown in figures 33 to 35 the height of the beams is adjustable by means of commonly driven hydraulic cylinders or, in a modification thereof (figures 36 and 37), by motors. Although none of the figures mentioned illustrates the trolleys comprising a lifting device it is clear from the disclosure of D1 when taken as a whole that these trolleys are present in all embodiments. The adjustment of the height of the beams in the fifth embodiment is associated only with their position during replacement or maintenance of the dies. Use of this height adjustment in place of the lift devices in the trolleys to provide the transfer motion would run contrary to the object of the invention according to D1.

2.3 The board concludes from the foregoing that the subject-matter of claim 1 is new with respect to the disclosure of the invention according to D1. Moreover, it is new also with respect to the disclosure of D8 in as far as it includes the feature that the lifting beams are stationary in the workpiece conveying direction. By comparison, according to D8 the cross bars are fixed longitudinally of the lifting beams which are movable in the workpiece conveying direction.

Inventive step (Article 56 EPC)

3. In the board's view the closest state of the art for consideration of inventive step is the earlier prior art of D1. That feed device comprises parallel beams which are stationary in the workpiece conveying direction and which may be raised and lowered by an undisclosed source driving a system of horizontal and vertical racks. A plurality of pairs of carriers ("movable stands 3 and 4") which support cross bars 7, 8 having vacuum cups 9 for releasably engaging the workpiece are reciprocably movable along the beams in the workpiece conveying direction by means of a cam drive and connecting rods.

3.1 The subject-matter of present claim 1 differs from that of the earlier prior art of D1 in respect of the feature that:

- the lifting drive source is constituted by a servomotor which cooperates with the feed drive source while the feed mechanism displaces the cross bar forwards and backwards in the feed direction so that the cross bar may be displaced in any movement pattern as desired in dependence upon the configuration of the workpiece, thereby enabling the workpiece to be conveyed without causing any interference between the die and the workpiece.

3.2 The disclosure of the earlier prior art of D1 is silent as regards the lifting drive source. Whilst a cam drive is conventional in the art this would suffer from the inflexibility which the present patent sets out to reduce. Servomotors are already known in the art and

are a technical equivalent of a cam drive and would therefore be readily considered by the skilled person. D8 which discloses a transfer feeder in which both raising and lowering movements and feed movements are executed by the beams and produced by cam drives specifically discloses the use of servomotors as an alternative to the cam drives as being self-evident (D8' page 6, first full paragraph "selbstverständlich"). Also D1 in the disclosure of its invention proposes servomotors as an alternative to cam drives (cf. column 9, line 45 to column 10, line 2 and column 12, line 37 to 49 together with figures 9 and 14). Even the present patent specification acknowledges that it was already known in the art to use servomotors in place of cam drives, thereby allowing easy variation of the pattern of the transfer motion (paragraph 0006). The nature of servomotors is such that their use would render the feed and lift drive sources operable both independently and concurrently to achieve any desired movement pattern.

3.3 The board concludes from the foregoing that the subject-matter of claim 1 does not involve an inventive step.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

A. Vottner S. Crane