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D E C I S I O N
of 24 June 1997

Case Number: T 0949/94 - 3.5.2

Application Number: 89830147.8

Publication Number: 0376895

IPC: G11B 23/113

Language of the proceedings: EN

Title of invention:

Continuous feed and discharge flow through cassette loading apparatus and system

Applicant:

TAPEMATIC S.p.A.

Opponent:

-

Headword:

-

Relevant legal provisions:

EPC Art. 56

Keyword:

"Inventive step - yes (after amendment)"

Decisions cited:

-

Catchword:

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Boards of Appeal

Chambres de recours

Case Number: T 0949/94 - 3.5.2

D E C I S I O N
of the Technical Board of Appeal 3.5.2
of 24 June 1997

Appellant: TAPEMATIC S.p.A.
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Decision under appeal: Decision of the Examining Division of the
European Patent Office posted 1 September 1994
refusing European patent application
No. 89 830 147.8 pursuant to Article 97(1) EPC.

Composition of the Board:

Chairman: W. J. L. Wheeler
Members: R. G. O'Connell
A. C. G. Lindqvist

Summary of Facts and Submissions

- I. The appellant contests the decision of the examining division refusing European patent application No. 89 830 147.8.

The examining division held that the subject-matter of each of the independent claims 1 and 19 then on file lacked an inventive step in view of prior art documents

D1: US-A-4 438 468 and

D2: Feinwerktechnik + Messtechnik vol. 93, no. 6, August 1985, Munich DE, pages 317 to 320;
H. Petri: "Die automatische Montage von Video-Cassetten"

and common general knowledge in the art.

- II. Amended claims were filed with the statement of grounds of appeal and these were further amended in response to communications from the board. Claims 1 and 11, the respective independent apparatus and method claims now read as follows:

"1. A cassette-loading apparatus comprising:
- supply means (4) for supplying empty cassettes (1) to a cassette-loading machine (2);
- in-feed means (18) for bringing the empty cassettes (1) into the cassette-loading machine (2);
- transfer means (16) for transferring the empty cassettes (1) from the supply means (4) to the in-feed means (18);
- a loading station (50) provided on the front of the cassette-loading machine (2) for loading a predetermined length of tape into a cassette (1) engaged in the loading station,

- front transport means (30) acting along the front of the cassette-loading machine (2) for bringing said empty cassettes (1) to the loading station (50), and moving loaded cassettes (3) from the loading station;
 - an upper mechanism (24) for transferring the empty cassettes (1) from the in-feed means (18) to the front transport means;
 - out-feed means (76) for receiving the loaded cassettes (3) moved by said front transport means (30);
 - a lower mechanism (72) for transferring the loaded cassettes (3) from the front transport means (30) to the out-feed means (76);
- characterized in that
- said supply means comprises a supply conveyor (4) extending behind the cassette-loading machine (2) for supplying cassettes to a plurality of said loading machines;
 - said in-feed means comprises an in-feed conveyor (18) which exhibits one end placed on the back of the loading machine, near to said supply conveyor (4), as well as a second end placed on the front of the cassette-loading machine in correspondence with said upper mechanism (24), said in-feed conveyor (18) extending across the cassette-loading machine passing through the inside thereof for transferring the empty cassettes (1) from the back of the cassette-loading machine, through the cassette-loading machine, to the front of the cassette-loading machine;
 - said out-feed means comprises an out-feed conveyor (76) which exhibits one end placed on the front of the cassette-loading machine (2), in correspondence with said lower mechanism (72), as well as a second end placed on the back of the cassette-loading machine, near to a discharge conveyor (6) extending behind the cassette-loading machine (2) for receiving loaded cassettes (3) from said out-feed means, said out-feed conveyor (18) extending across the cassette-loading machine, passing through the inside thereof for

the cassette-loading machine, through the cassette-loading machine, to the back of the cassette-loading machine;

- said transfer means comprises a movable pick-up member (16) acting between the supply conveyor (4) and the in-feed conveyor (18) for picking up the empty cassettes (1) from said supply conveyor and transferring said cassettes to said in-feed conveyor."

"11. A method for loading and handling cassettes comprising the following steps:

- placing empty cassettes on a supply conveyor arranged for supplying cassettes to a plurality of cassette-loading machines (2) and extending behind said cassette-loading machines;

- transporting the empty cassettes on said supply conveyor (4) to at least one cassette-loading machine (2) in response to a signal from a cassette-loading machine in need of empty cassettes;

- picking up the empty cassettes (1) from the supply conveyor (4) for transferring it (*sic*) to an in-feed conveyor (18) exhibiting one end placed on the back of the loading machine, near to said supply conveyor (4) as well as a second end placed on the front of the cassette-loading machine;

- moving the empty cassettes (1) on the in-feed conveyor (18) across the cassette-loading machine (2), from the back to the front of the loading-machine itself, passing through the inside thereof;

- transporting an empty cassette (1) from the in-feed conveyor (18) to a loading station (50) provided on the front of the cassette-loading machine;

- loading tape into the cassette;

- transferring the loaded cassette (3) from the loading station (50) to an out-feed conveyor (76) exhibiting one end placed on the front of the cassette-loading machine (2) as well as a second end placed on the back

of the cassette-loading machine;
- moving the loaded cassette (3) on the out-feed conveyor (76) across the cassette-loading machine, from the front to the back of the same passing through the inside thereof;
- releasing the loaded cassette (3) onto a discharge conveyor (6) placed on the back of the cassette-loading machine."

Claims 2 to 10 are dependent on claim 1.

III. The appellant argued essentially as follows:

Claim 1 was delimited with respect to D1, the agreed closest prior art. The problem solved by the claimed apparatus was to provide a continuous feed and discharge flow-through cassette tape loader, in which access to the machine for operating or maintenance purposes was unimpeded. The claimed solution involving the provision of in-feed and out-feed conveyors passing through the inside of a loading machine was not derivable from any of the cited prior art documents nor from common general knowledge in the art.

D2 did not relate to a system for feeding a bank of identical apparatuses, but a plurality of different apparatuses (sub-assembly stations) each supplied by a respective conveyor line and connected (by discharge conveyors) to a common final assembly point. This aspect of the difference between the claimed tape-loading apparatus and the prior art was now clarified by the amendment to claim 1.

Two of the documents cited in the European search report, viz DE-A-3 248 135 (D3) and DE-A-2 643 725 (D4), did relate to systems for supplying a bank of identical apparatuses but neither of them disclosed the use of spur conveyors.

Considering the teaching of the prior art, even if the skilled person arrived at the idea of routing the main conveyor behind the cassette loading machines, he would not envisage the provision of spur conveyors which reach the front portion of the machines passing through the inside of the latter.

IV. The appellant requested that the decision under appeal be set aside and that a patent be granted on the basis of the following documents:

Claims: 1 to 5 (part I) and 11(part II) filed with letter dated 30 May 1997, received 4 June 1997;
5 (part II) to 11(part I) faxed 1 December 1994.

Description: pages 5 to 9 as originally filed;
page 3, 4a and 10 faxed 8 February 1993;
pages 2 and 2a filed 27 May 1994;
pages 1 and 4 filed 4 June 1997.

Drawings: sheets 1 to 5 as originally filed.

Reasons for the Decision

1. *Admissibility*

By interlocutory decision dated 24 March 1995 the board, in a different composition, found the appeal to be admissible.

2. *Closest prior art, relevant technical problem and solution*

2.1 Claim 1 is properly delimited with respect to prior art document D1, which is the undisputed closest prior art. Starting from D1, which is a **batch-fed** cassette-loading apparatus employing a **manually insertable** magazine container, the problem solved by the apparatus specified in claim 1 is to provide a continuous feed and discharge flow-through cassette tape loader. More specifically, it is to provide such a system in which the conveyor feed is so arranged that access to the loading machine is unimpeded for operating or maintenance purposes and that the loading machine can be arranged as one of a plurality of such machines supplied with empty cassettes from a common source; cf column 2, line 9 to column 3, line 19 of the published application.

2.2 No positive contribution to an inventive step appears to be involved in the formulation of the first part of this problem given the notorious advantages of continuous feed and discharge and of unimpeded access to the operating region of any machine. As regards the last aspect of the problem, it is not disputed by the appellant that machines are commonly operated in parallel from a common source of parts to be processed to provide a capacity exceeding that of a single machine. This is acknowledged as a common practice in

the art in DE-A-3 248 135 (D3) (page 4, lines 6 to 26) and DE-A-2 643 725 (D4) (page 13, lines 5 to 12), both cited in the European search report and mentioned by the appellant in its response to the board's communication.

2.3 The above problem is plausibly solved by modifying the D1 apparatus as specified in the characterising portion of claim 1.

3. *Assessment of whether the solution specified in claim 1 involves an inventive step*

3.1 Now that the aspect of the problem relating to enabling the apparatus to function as one of a bank of such cassette-loading apparatuses is reflected in claim 1, prior art document D2 is seen to fall far short of suggesting the claimed solution. In the first place it does not relate to the loading of empty cassettes in the sense of the present application, but rather to their assembly from piece parts at a series of work stations each of which performs a specific, different operation. The only appearance of complete cassettes in D2 is at the output of the complete assembly line. In addition the functional organisation of the assembly line in D2 means that the conveyor arrangements have only a very superficial similarity with those in the present application. In particular the short transverse conveyors linking the main conveyor to the individual sub-assembly stations are simple U-bend extensions of the main conveyor path carrying exactly the same flow as the latter to and from the stations respectively. It is inherent in the operation of D2 that there is no through connection on the main conveyor by-passing a sub-assembly station since this would misdirect the parts. In contrast claim 1 of the present application specifies, as the first feature of its characterising portion, "a supply conveyor (4) extending behind the

cassette-loading machine (2) for supplying cassettes to a plurality of said cassette loading machines" and, as the last feature of its characterising portion, that "said transfer means comprises a movable pick-up member (16) acting between the supply conveyor (4) and the in-feed conveyor (18) for picking up the empty cassettes (1) from said supply conveyor and transferring said cassettes to said in-feed conveyor." The latter features, taken together, imply that only some of the empty cassettes are transferred from the common supply conveyor to the in-feed conveyor of each cassette-loading machine, which would be incompatible with the operation disclosed in D2. The board therefore concludes that an argument that the skilled person addressing the problem specified above would, by considering notional variations of the D2 assembly line, modify the D1 apparatus to arrive at the cassette loading apparatus of claim 1 would be a speculation based on hindsight. In the judgement of the board, the solution specified in claim 1 would not be obvious to the skilled person, having regard to D1 and D2 and any common general knowledge in the art of which there is evidence available to the board. The subject matter of this claim is therefore to be considered as involving an inventive step within the meaning of Article 56 EPC.

3.5 For the reasons given immediately above the grounds for refusal given in the decision under appeal do not apply to the present claim 1.

3.6 In exercise of its power under Article 111(1) EPC the board has considered the other prior art documents on file, ie D3, D4 and US-A-4 330 925 (D5), the latter being the remaining document cited in the search report.

- 3.6.1 D5 relates to single machine operation. At Figure 8 it shows a pair of short anti-parallel conveyors arranged transversely to a main conveyor, but the similarities with the claimed tape-loading apparatus end there. In particular it should be noted that the sole purpose of the conveyor referenced C₂₂ of the pair is to complete an endless loop for the palettes which carry loaded reel sets to be inserted into cassette bases transported on the main conveyor. As a source of inspiration for the claimed solution it is no more relevant than D2.
- 3.6.2 D3 and D4 are more relevant than D2 or D5 insofar as they relate to banks of identical tape loading machines supplied by a common conveyor with cassettes to be loaded, but do not go further than this in the direction of the claimed solution. In D3 a pair of supply and discharge conveyors run past the working face of the loading machines, cassettes are picked off, loaded immediately adjacent and above the supply conveyor at the machine face and transferred to the adjacent discharge conveyor. In D4 a single conveyor runs past the working face of the loading machine; cassettes are picked off in synchronised sequence at the respective machines, loaded at the machine face and returned to the common conveyor in the same synchronised sequence. These two documents were cited as technological background ie. category A in the search report and were not referred to in the first instance proceedings. They provide no suggestion for the skilled person in the direction of a solution to the problem of providing unimpeded access to the working face of the loading machines for operation and maintenance purposes.
- 3.7 Hence the board concludes that, having regard to the prior art on the file, the apparatus specified in claim 1 is not obvious to a person skilled in the art

and accordingly that the subject-matter of this claim involves an inventive step within the meaning of Article 56 EPC. The same is true for the dependent apparatus claims 2 to 10. This finding also applies, for analogous reasons, to the method claim 11.

4. In the judgement of the board, the application meets the requirements of the EPC. However, the board has noticed an obvious linguistic error in claim 11 (part II) (as filed 4 June 1997 with the letter dated 30 May 1997), namely, after the first occurrence of the word "transferring" the pronoun "it" should be deleted and replaced by "them". The board directs that this error be corrected.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the department of first instance with the order to grant a patent on the basis of the appellant's request (see paragraph IV above), with correction of the obvious linguistic error in claim 11 (see paragraph 4 above).

The Registrar:



M. Kiehl

The Chairman:



W. J. L. Wheeler