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**D E C I S I O N**  
**of 9 January 2003**

**Case Number:** T 0938/00 - 3.2.7

**Application Number:** 92118455.2

**Publication Number:** 0536804

**IPC:** B30B 15/14

**Language of the proceedings:** EN

**Title of invention:**  
Method of operating a press

**Patentee:**  
Ishii Tool & Engineering Corporation

**Opponent:**  
Gebr. Schmidt Fabrik für Feinmechanik

**Headword:**  
-

**Relevant legal provisions:**  
EPC Art. 56

**Keyword:**  
"Inventive step (no)"

**Decisions cited:**  
-

**Catchword:**  
-



Case Number: T 0938/00 - 3.2.7

**D E C I S I O N**  
**of the Technical Board of Appeal 3.2.7**  
**of 9 January 2003**

**Appellant:** Ishii Tool & Engineering Corporation  
(Proprietor of the patent) 1-3, Higashi-Ohmichi 2-chome  
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**Representative:** TER MEER STEINMEISTER & PARTNER GbR  
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**Respondent:** Gebr. Schmidt  
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**Representative:** Otten, Hajo, Dr.-Ing.  
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**Decision under appeal:** Decision of the Opposition Division of the  
European Patent Office posted 7 July 2000  
revoking European patent No. 0 536 804 pursuant  
to Article 102(1) EPC.

**Composition of the Board:**

**Chairman:** A. Burkhart  
**Members:** H. E. Felgenhauer  
E. Lachacinski

## Summary of Facts and Submissions

- I. The appellant (patentee) filed an appeal against the decision of the Opposition Division revoking the European Patent No. 0 536 804.

Opposition was filed against the patent as a whole based on the grounds of opposition according to Articles 100(a), (b) and (c) EPC (lack of inventive step; insufficient disclosure; subject-matter of the European patent extending beyond the content of the application as filed).

The Opposition Division revoked the patent due to lack of inventive step in view of the following prior art documents:

D1: JP-U-60-52097 and its English translation, and

D2: EP-A-0 025 987.

During the appeal proceedings the respondent referred to document

D4: GB-A-2 186 394

which was already cited in its statement of grounds of opposition.

- II. Oral proceedings before the Board of Appeal were held on 9 January 2003.

- (i) The appellant requested that the decision under appeal be set aside and that the patent be maintained with claim 1 as filed on 5 July 2002.

(ii) The respondent (opponent) requested that the appeal be dismissed.

(iii) Claim 1 reads as follows:

"A method of operating a mechanical press machine driven by servo motor designed to apply external force to a part or the whole of the surface of a workpiece to work on the workpiece, by controlling a speed or (correctly: of) a ram thereof, said ram holding a tool at a distal end thereof in a manner such that said speed comprises:

- a constant approaching first speed in which said tool is moved at said first speed towards said workpiece until said tool reaches a high-noise position where said tool starts to contact with said workpiece,

- a constant working second speed substantially lower than said constant approaching first speed such that said tool does not generate high noise while working on said workpiece,

- a constant separating fourth speed in which said tool is separated from said workpiece after completion of working, said separation fourth speed being substantially larger than said working second speed,

- a constant suspension third speed in which said tool stays substantially still for a predetermined period between the second speed and the fourth speed;

- the separating fourth speed being substantially lower than said approaching first speed".

III. The appellant argued essentially as follows:

- (i) In the assessment of documents D1 and D2 it needs to be considered that the problem underlying the subject-matter of claim 1, namely to provide a method of operating a mechanical press machine which enables a reduction of noise generated during operation of the press machine, is not referred to in these documents.
- (ii) Whether or not it comes within the knowledge of the person skilled in the art that during the operation of a mechanical press generation of noise can be reduced by lowering the working speed of the press, at which the tool acts on the workpiece, depends on the qualification attributed to the person skilled in the art. For the present situation no indication is given, that such knowledge is within the means of the person skilled in the art.
- (iii) The subject-matter of claim 1 is distinguished from the method of operating a mechanical press according to document D1, which constitutes the closest prior art, by its last two features, of which the last one contributes to the problem being solved.
- (iv) Even if it is assumed to be apparent that, within the method of operating a mechanical press according to document D1, the step of lowering the working speed results in a reduction of noise, this document cannot be considered as leading to the method according to claim 1, since no indication is given with

respect to the last feature of claim 1, according to which the separating speed is substantially lower than the approaching speed.

This holds true in particular since according to Figure 4 of document D1 the separating speed equals the approaching speed and since the effects of a separation speed as defined by the last feature of claim 1, which in the patent in suit (cf. column 2, lines 3 to 9; column 13, lines 8 to 14) are referred to as reducing the generation of a stripping noise or giving sufficient time for the separation of workpieces or cuttings from the tool to which they are vacuum-attached, are not mentioned in document D1.

IV. The respondent argued essentially as follows:

- (i) Even though the problem of noise reduction is not referred to explicitly in document D1 it needs to be considered that during operation of a mechanical press as disclosed in this document or in the patent in suit, certain standards have to be met with respect to noise generation. This generally known fact, which is acknowledged in the patent in suit (cf. column 2, lines 25 to 29), can be derived from document D4. Consequently applying the method according to document D1 the actual value to be set for the working speed needs to be considered as being one at which the noise generated does not exceed a level considered as being admissible with regard to the appropriate standard to be met.

- (ii) It comes within general technical knowledge that the noise generated, while the method of operating a mechanical press machine according to document D1 is applied, is related to the working speed, the relationship being such that lowering the working speed, at which the tool acts on the workpiece, results in a reduction of the noise generated. This can e.g. be derived from document D4 according to which lowering of the working speed of the ram of a press causes a reduction of the noise generated during the working step. That this effect is a generally known one is furthermore acknowledged in the patent in suit.

For the method according to document D1 the constant working speed being substantially lower than the constant approaching speed thus has, besides the effect of the forming accuracy being enhanced, also the effect referred to in claim 1 of the patent in suit, namely that a high noise is not generated while the tool acts on the workpiece.

Although this effect is not explicitly mentioned in document D1 it is readily noticeable in applying the method disclosed by this document, since this effect can directly be evidenced by hearing or detecting via noise measurement.

- (iii) The subject-matter of claim 1 is distinguished from the method of operating a mechanical press according to document D1 by its last feature only.

The second last feature of claim 1, according to which the method comprises a constant suspension third speed, in which the tool stays substantially still for a predetermined period, cannot be considered as being a distinguishing feature. The reason being that a suspension speed of this kind is inherent to the method according to document D1 as well as the method according to claim 1, since in either method between the working speed and the separating speed the direction of the speed of the tool changes in a lower dead point due to the structure of the mechanical press machine referred to in document D1 and the patent in suit. This holds true in particular considering that the predetermined period referred to in this feature can according to the patent in suit (column 8, lines 46 to 48) be set to a value of the range extending from 0 sec to 9.9 sec.

- (iv) The method according to document D1 comprises all of the features of claim 1 with the exception of the last feature of this claim, according to which the separating speed is substantially lower than the approaching speed.

According to the patent in suit this feature does not contribute to the problem stated in the patent in suit being solved in general. Indeed as indicated in the patent in suit this feature is essential, in providing an effect, only in two particular cases. In the first case, which relates to noise reduction and thus to the problem to be solved, this feature serves to reduce a so called "stripping noise", which can



occur when a cut workpiece is separated from the tool (cf. column 2, lines 6 to 9). In the second case, for which a noise reduction is not mentioned or evident, this feature serves to give a time sufficient for a workpiece or cuttings, vacuum-attached to the tool, to separate therefrom (cf. column 13, lines 8 to 14).

If, deviating from the method according to the embodiment of document D1, in applying the method according to this document either one of these two particular situations applies to a particular workpiece being treated, the occurrence of stripping noise or of vacuum-attachment of workpieces or cuttings is directly noticeable. Furthermore it is obvious that the person skilled in the art will, if such a particular situation so requires, lower the separating speed to reduce the generation of noise, as is apparent from document D1 with respect to the working speed.

### **Reasons for the Decision**

1. *Claim 1*

Claim 1 is amended essentially by adding its last feature, which is based on the drawing as originally filed (Figure 4). The addition of this feature restricts the scope of protection of claim 1 as granted.

Therefore, the amended claim 1 does not contravene

Articles 123(2) and (3) EPC.

2. *Novelty*

Novelty was not an issue in the appeal proceedings. Indeed none of the documents discloses a method comprising the features of claim 1. As shown in the following, claim 1 differs from the method according to document D1 by its last feature. The method according to document D2, which has only been briefly referred to in the oral proceedings, does not concern a mechanical, but a hydraulic, press machine.

Therefore, the method of claim 1 is novel.

3. *Inventive step*

3.1 Closest state of the art

It is undisputed that document D1 constitutes the closest prior art. The method disclosed by this document comprises all features of claim 1 except its last feature.

Document D1 discloses a method of operating a mechanical press machine driven by a servo motor designed to apply external force to a part or the whole of the surface of a workpiece to work on the workpiece, by controlling the speed of a ram thereof, said ram holding a tool at a distal end thereof (cf. the claim stated on page 1; page 3, paragraph 2).

According to document D1, due to provision of a controllable the servo motor, the various speeds within one stroke or cycle of the tool can be individually

controlled (cf. e.g. page 4, lines 20 to 23; page 5, lines 17 to 20; Figure 4) according to given working conditions.

According to the (only) embodiment of document D1 the speeds are controlled as indicated on the stroke/time diagram of Figure 4 in a manner such that the speed of the tool comprises, complying with features of claim 1:

- (a) a constant approaching first speed (cf. Figure 4: speed between points A, B) in which said tool is moved at said first speed towards said workpiece until said tool reaches a high-noise position (Figure 4: point B) where said tool starts to contact with said workpiece,
- (b) a constant working second speed (cf. Figure 4: speed between points B, C) substantially lower than said constant approaching first speed such that said tool does not generate high noise while working on said workpiece,
- (c) a constant separating fourth speed (cf. Figure 4: between points C, D) in which said tool is separated from said workpiece after completion of working, said separation fourth speed being substantially larger than said working second speed, and
- (d) a constant suspension third speed (cf. Figure 4: speed around point C) in which said tool stays substantially still for a predetermined period between the second speed and the fourth speed.

Speed d), which is not mentioned explicitly in

document D1, is considered as being disclosed by the embodiment of document D1 since, as can be derived from Figure 4, due to the change of direction of the speed at lower dead point C, the tool necessarily stays substantially still for a predetermined period and since according to the patent in suit the predetermined period can be set to a value within the range extending from 0 sec to 9.9 sec and thus be rather short.

The method according to claim 1 thus differs from the one of document D1 by its last feature according to which

- (e) the separating fourth speed is substantially lower than said approaching first speed.

The distinguishing feature (e) defines an upper limit for the separating speed, for which - corresponding to the method according to document D1 - a lower limit is defined by feature (c).

Although reduction of noise is not explicitly referred to in document D1 this document qualifies as closest prior art in applying the problem solution approach, for the following reasons:

As indicated above, both the method of document D1 and of the patent in suit are applied on the same type of mechanical press machine, both having a controllable servo motor and both methods essentially consist in setting the speeds for the tool within a cycle.

Furthermore, as indicated above, the speeds according to document D1 are, with the exception of the upper

limit of the separating speed according to feature (e), given in the same relationship with respect to each other as defined in claim 1.

Finally the method according to document D1 relates to a similar purpose (or objective) as the method according to claim 1.

Speeds as indicated for the method according to the embodiment of document D1 are provided to lead to the effect, that the forming accuracy is enhanced, while the cycle time is reduced as much as possible (cf. page 4, lines 16 to 24).

Providing thereby a working speed as defined by feature (b) leads, in addition to the above mentioned effect, directly to a reduction of the noise which is generated, while the tool acts on the workpiece.

On the one hand this effect can, e.g. in comparison with the prior art method referred to in document D1 (cf. Figure 2: working speed between points B, C), within which the working speed is not lowered as defined by feature (b), be directly experienced by hearing and/or directly measured via acoustical measurement.

On the other hand the relationship between the value of the working speed and the noise generated during working, which underlies feature (b), is, for the person skilled in the art to be considered in the present case, well known and forms part of the general technical knowledge, as can be derived e.g. from document D4 (cf. page 3, lines 1 to 16) and as is acknowledged in the patent in suit (column 2, lines 33

to 36).

Furthermore, as can be derived from document D4 (page 3, lines 17 to 28) and the patent in suit (column 2, lines 15 to 36), it belongs to the general technical knowledge that applying the method according to the embodiment of document D1, as well as the one according to claim 1 in practice, with respect to the noise generated during working, certain standards with respect to noise emission have to be met by setting the working speed to an appropriate value.

Thus applying the method according to the embodiment of document D1 in practice, the actual value set for the working speed must not only be such that working accuracy is appropriate but also such that the noise generated due to this working speed does not exceed an allowable level given by the applicable standard.

Consequently considering the general technical knowledge outlined above, the method according to the embodiment of document D1 needs to be considered as satisfying the applicable standard with respect to noise emission. For the working speed this implies that for the conditions underlying the embodiment according to Figure 4 of document D1 the standard is met by the working speed being set according to feature (b). For the separating speed this implies that this speed can - as long as no inadmissible stripping noise is generated or as long as pieces vacuum-attached to the tool do not require to do so - be set to a value being similar to the one of the approaching speed (cf. D1, Figure 4), with the effect that the cycle time is kept as small as possible.

### 3.2 Problem underlying the invention

In view of the above the method according to the embodiment of document D1 thus generally, that is if no special situation is given, solves the problem referred to in the patent in suit (column 2, lines 46 to 49), namely "to provide a method of operating a press machine which enables a reduction of the noise generated during operation of the press machine".

In view of document D1, based on the effect to be obtained by distinguishing feature (e), the problem to be solved by the method according to claim 1 thus lies in modifying the known method, such that, with respect to the known method, further special conditions can be accounted for.

According to one of these special conditions a stripping noise is generated, while the workpiece is separated from the tool (cf. patent in suit, column 2, lines 3 to 9). According to the other special condition a workpiece or cuttings are vacuum-attached to the tool (column 13, lines 8 to 14).

A first problem underlying the method according to claim 1 thus can be seen in providing a method according to features (a) to (d), within which during the separation of the tool from the workpiece noise is generated, such that this stripping noise is reduced, e.g. to an admissible level.

A second problem can be seen in providing a method according to features (a) to (d), within which after working the workpiece or cuttings can be vacuum-attached to the tool, such that sufficient time is

given for the workpiece or cuttings to separate from the tool.

### 3.3 Solution

Both of the above identified problems are solved by a method according to features (a) to (d) in that the separating speed is given an upper limit as defined by feature (e).

### 3.4 Obviousness

Starting from the method comprising features (a) to (d) as known from document D1 and considering the general technical knowledge as indicated above, the solution according to claim 1 is obvious.

Applying the method according to the embodiment of document D1 in the special case within which vacuum-attachment of the workpiece or cuttings is encountered and has to be dealt with, then this disadvantage will be readily identifiable, either by visual inspection or appropriate measurement. In this case it is likewise apparent that the vacuum-attachment occurs at the end of the working operation, while the tool commences movement with the separating speed. If, corresponding to the situation referred to in the patent in suit (column 13, lines 8 to 14), the attachment is furthermore such that a sufficient time needs to be given for the attached workpiece or cuttings to separate from the tool, the obvious perception of the problem directly leads to the solution in that the separating speed is not only provided as defined by feature (c) but at the same time limited according to feature (e). Provision of the separating speed such



that the time during which the tool is moved at separation speed, and thus the time for separation, is appropriately increased is thus, for the special case referred to, an obvious measure enabling elements vacuum-attached to the tool to safely separate from the tool before it approaches the next workpiece to be worked upon.

Applying the method according to the embodiment of document D1 in the special case within which during the separation of the workpiece from the tool an unacceptable stripping noise is generated, the disadvantage of stripping noise being generated is directly perceivable, either acoustically by hearing such stripping noise or by appropriate measurements. Performance of such measurements is generally known, e.g. to ascertain that the generated noise meets the applicable standard with respect to noise generation (cf. e.g. D4, page 5, lines 108 to 118). Thus, in case it applies, in such a special case it is readily perceivable that a stripping noise is generated. Detecting this noise also its cause, namely the separation of the tool from the workpiece, is immediately identified as it is e.g. the case for the noise generated during working in which the tool likewise acts on the workpiece.

Applying the general technical knowledge referred to above (cf. document D4, page 3, lines 1 to 28; patent in suit: column 2, lines 30 to 36) or customary practice resulting therefrom the speed, in which the tool acts on the workpiece, identified as the cause of detected unacceptable noise will be lowered to reduce this noise. This applies, in the same manner as it applies with respect to the working speed according to

feature (b), to the separating speed which, in the special case of it being necessary, is lowered according to feature (d). Starting from the method of the embodiment according to document D1 the solution to the first problem as defined by features (a) to (e) is thus obvious.

In order to be complete it should be indicated that the same result is obtained if the teaching of document D1 is followed in applying this method to fabricate a particular workpiece. Since document D1, as it is the case for the patent in suit, does not define specific values but only the relationship between the various speeds within a cycle, applying this method appropriate values for the various speeds have to be set. Following customary practice start values for these speeds will be set e.g. according to experience. These values will thereafter be optimised for the particular manufacturing situation, considering various conditions, namely accuracy of the workpiece, cycle time and the reduction of noise. This is customary practice (cf. D4, e.g. page 3, lines 114 to 118) to which document D1 also directly leads, since its disclosure is not limited to the speeds indicated with respect to the disclosed embodiment (cf. the sentence bridging pages 4 and 5) and since it is indicated that the speed of the controllable motor (and thus the speed of the ram) "can be controlled according to the forming conditions of the workpiece .... thus providing the effect in that the forming can be done in the best condition according to various conditions" (page 5, lines 17 to 20).

This customary practice generally applies with respect to the working speed, which will be set to an

appropriate value leading to the effect defined by feature (b). In the special case within which a stripping noise is generated this applies likewise with respect to the separating speed, which, being lowered to reduce the stripping noise in the course of optimisation, satisfies the condition defined by feature (e). Thus by applying the method according to document D1 in a particular case customary optimisation of set values for the various speeds within a cycle leads to a value for the working speed and, if necessary, for the separating speed according to features (b) and (e), such that the noise generated meets the appropriate standard with respect to noise emission.

- 3.5 Since as indicated above the method according to claim 1 is obvious in view of the method disclosed in document D1 and the applicable general technical knowledge, the subject-matter of claim 1 does not involve an inventive step (Article 56 EPC).

## **Order**

**For these reasons it is decided that:**

The appeal is dismissed.

The Registrar:

The Chairman:

D. Spigarelli

A. Burkhardt