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D E C I S I O N
of 17 June 2003

Case Number: T 0671/01 - 3.2.1

Application Number: 93203080.2

Publication Number: 0596577

IPC: B21K 27/02

Language of the proceedings: EN

Title of invention:

Installation for making products of wire-shaped material

Patentee:

NEDSCHROEF HERENTALS N.V.

Opponent:

The National Machinery Company

Headword:

-

Relevant legal provisions:

EPC Art. 54, 56, 123(2)

Keyword:

"Novelty - yes"

"Inventive step - yes"

"Amendments - feature disclosed only in drawings (allowed)"

Decisions cited:

T 0169/83, T 0284/94

Catchword:

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Case Number: T 0671/01 - 3.2.1

D E C I S I O N
of the Technical Board of Appeal 3.2.1
of 17 June 2003

Appellant: NEDSCHROEF HERENTALS N.V.
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Decision under appeal: Interlocutory decision of the Opposition
Division of the European Patent Office posted
4 April 2001 concerning maintenance of
European patent No. 0596577 in amended form.

Composition of the Board:

Chairman: M. Ceyte
Members: J. Osborne
G. Weiss

Summary of Facts and Submissions

- I. The appeal by the patent proprietor is directed against the interlocutory decision of the Opposition Division dated 4 April 2001 which found that, taking account of the amendments made by the patent proprietor during the opposition proceedings according to the second auxiliary request, the European patent No. 0 596 577 and the invention to which it relates satisfy the requirements of the EPC.
- II. The appellant filed its notice of appeal on 1 June 2001, together with payment of the appeal fee. The statement of grounds was filed 1 August 2001.
- III. The following prior art which was cited during the opposition proceedings played a role in the appeal:
- D4 US-A-3 599 468
- D5 EP-A-0 288 086
- D9 US-A-4 942 796.
- IV. During oral proceedings held 17 June 2003 the appellant (patent proprietor) requested that the decision under appeal be set aside and that the patent be maintained with claim 1 submitted during the oral proceedings and claims 2 to 5 filed by fax of 16 May 2003. The respondent (opponent) requested that the appeal be dismissed.

V. Claim 1 according to the appellant's request reads as follows, wherein wording deleted from claim 1 as granted is included in [-] and wording added is indicated in italics:

"1. An installation for making products of wire-shaped material, comprising a mechanism (1) for intermittently supplying the wire material (11), a mechanism (2) for reducing the diameter of the wire material and a press mechanism (4) to form wire material pieces in the desired shape, a cutting mechanism (3) for the pieces of wire material forming a part thereof, in which said supply mechanism of the wire material (11) is formed by a supply device (1) incorporated in the press mechanism (4), said supply device also being provided with a wire drawing mechanism (2) forming one unit therewith, one and the other such that the supply mechanism (1), the wire drawing mechanism (2), the cutting mechanism (3) and the press mechanism (4) are all combined into one single machine, characterized in that the device formed by the supply and drawing mechanisms (1, 2) comprises a carriage (5) which is movable back and forth on first guides (6) by means of a driving device (20), a wire clamp (9) [connected with] *fixed on* the carriage (5), a fixedly positioned wire clamp (12) and a draw plate (17, 18) mounted on the carriage (5) *rearward and upstream - in supply direction - of the wire clamp (9) which is fixed on said carriage (5), wherein the wire clamps (9; 12) are both formed by pairs of clamping jaws (9a, 9b; 12a, 12b), each having one clamping jaw that is movable with respect to the wire towards and away from the wire in a radial plane, the clamps being operated pneumatically, hydraulically or mechanically.*"

Dependent claims 2 to 5 define features additional to the subject-matter of claim 1.

VI. The appellant (patent proprietor) argued essentially as follows:

The features of claim 1 that the supply mechanism, the wire drawing mechanism, the cutting mechanism and the press mechanism are all combined into one single machine is not disclosed in D4. Furthermore, according to D4 the wire clamp on the carriage and the fixedly positioned wire clamp are both in the form of wedge clamps. The jaws of such clamps have a component of motion parallel to the axis of the wire and so are not movable towards and away from the wire in a radial plane. It follows that the subject-matter of claim 1 is novel in comparison with the disclosure of D4.

As regards inventive step, the claimed features of the fixedly-positioned and carriage-mounted clamps, both of which have a jaw moving in a radial plane, solves the problem of improving the feed accuracy of drawn wire. D4 teaches that the loads to be applied to the wire during drawing and feeding differ greatly and whilst in D4 a clamp having jaws which move in a radial plane is used for feeding the undrawn stock, wedge clamps are used in the drawing mechanism. D5 concerns an infeed mechanism employing a clamp having jaws movable in a radial plane. However, this clamp is not used with drawn wire, the surface of which would be damaged by the serrated surface on its jaws, and it only engages the "pointed segment 12" during the introduction of the wire into the draw clamp. This "segment" is merely an end portion prepared for introducing the wire into the

feeding device, is not drawn and is subsequently discarded. In common with D4, D5 employs a wedge clamp in the draw carriage. Although D9 discloses clamps each having a jaw which is movable in a radial plane, this document relates to a feeding device for use with undrawn, dimensionally inaccurate wire. Its teaching in this respect does not go beyond that of D4. In summary, there is no disclosure in the prior art of clamps which operate on drawn wire to apply the load necessary for the drawing operation and which have clamping jaws which move in a radial plane.

VII. The counter-arguments of the respondent (opponent) can be summarised as follows:

According to T 169/83 (OJ EPO 1985, 193) the introduction into a claim of a feature which is disclosed only in drawings is subject to conditions which have not been shown to have been fulfilled in the present case.

Present claim 1 does not specify that the clamps move exclusively in a radial plane. Since the movement of the wedge clamps of D4 is partly in a radial plane, these satisfy the wording of the claim. Moreover, it is derivable from the text of D4, which is a disclosure independent of the content of the drawings, that the drawing and feeding apparatus and processing apparatus must be in a fixed relationship and operate in synchronisation and so must be regarded as a single machine. Since all other features of present claim 1 are clearly known from D4, the subject-matter of the claim lacks novelty.

According to T 284/94 (OJ EPO 1999, 464) it is not permissible to take an isolated feature from the description and use it in support of inventive step unless it is clear for the skilled person that it contributes to the solution of the problem. This requirement is not satisfied in the present case as regards the movement of the jaws in a radial plane, which feature has not been searched by the EPO and the effect of which was not originally disclosed. Indeed in the specification it is stated that the accuracy of feed is due to the movement of the carriage, without reference to the clamps.

Even if the subject-matter of present claim 1 were to be considered novel with respect to the disclosure of D4, it would be obvious in the light of a combination of D4 with either of D5 or D9. D5 discloses both a clamp having a jaw which moves in a radial plane and a wedge-type clamp. This is evidence that both types were known to the skilled person who would choose between them according to circumstances. Moreover, the clamp having the jaw moving in a radial plane is positioned downstream of the die and therefore engages drawn stock. D9 also discloses clamps having a jaw which moves in a radial plane and, moreover, discloses that the feeder and forging mechanisms are combined in a single machine, all of which teaching is transferable to the machine of D4.

Reasons for the decision

Amendments

1. The amendments to claim 1 are disclosed in the translation into English (Article 14(4) EPC) of the application as originally filed (hereafter TA) as follows (Article 123(2) EPC):
 - that the wire clamp 9 is not "connected with" but "fixed on" the carriage is derivable from page 6, line 20 which states that the clamp is "fixedly positioned" with respect to the carriage, in combination with Figure 2 which shows the clamp mounted on the carriage;
 - that the draw plate is mounted on the carriage "rearward and upstream - in supply direction of the wire clamp (9)" is clearly shown in Figure 2 in which the wire passes from left to right during processing;
 - that the wire clamps are both formed by pairs of clamping jaws, each having one clamping jaw that is movable with respect to the wire towards and away from the wire in a radial plane is derivable from Figure 2;
 - that the clamps are operated "pneumatically, hydraulically or mechanically" is disclosed in page 9, lines 17, 18.

2. The replacement of "connected with" by "fixed on" does not extend the protection conferred by the claim because it is more restricted in meaning (Article 123(3) EPC).

3. According to T 284/94 (*supra*) cited by the respondent the amendment of a claim by the introduction of a technical feature taken in isolation from the description of a specific embodiment is not allowable under Article 123(2) EPC if it is not clear beyond any doubt for the skilled person when reading the application documents as originally filed that the subject-matter of the claim thus amended provides a complete solution to a technical problem unambiguously recognizable from the application.
 - 3.1 In the present case it is explained in the application that the wire supply and drawing system of the invention delivers the "exactly desired length" of wire, this being a fundamental condition to be met (see the paragraph bridging pages 2, 3 of TA). In the preferred embodiment the desired length is determined by the stroke of a carriage which carries a clamp to grip the stock during its advancement to the cutting mechanism and which is driven reciprocally by a crank arrangement, the stroke being accurately adjustable (TA page 8, lines 30 to 36). Furthermore, it is stated that during the movement of the carriage towards the cutting mechanism the wire is "transferred over the desired length" and the knife "cuts ... the desired length" (TA page 8, lines 15 to 23) whilst the clamp on the carriage is maintained closed. From this it is implicit that no wire length gauge is necessary. This concentration on the feed accuracy obtainable by the

stroke of the carriage is a clear teaching to the skilled person that the movement of the carriage is exactly transferable to the wire. In the light of this disclosure it would be clear for the skilled person when faced with the application as originally filed that the arrangement of the clamps with jaws movable in a radial plane as shown in Figure 2 would be essential to achieving the desired feed accuracy. The Board therefore finds that the introduction into claim 1 of the feature relating to the movement of the clamps in a radial plane is not inconsistent with the above-mentioned decision.

4. According to T 169/83 (*supra*) cited by the respondent it is permissible in accordance with Article 123(2) EPC to include in claims features taken from drawings provided the structure and the function of such features were clearly, unmistakably and fully derivable from the drawings by the skilled person. In the present case the respondent did not argue why these requirements had not been fulfilled but only that it had not been shown that they are. As set out under 3.1 the Board finds that these requirements are indeed fulfilled.

5. As regards the respondent's argument that the additional feature in claim 1 that the clamping jaws are "movable in a radial plane" has not been searched by the EPO, the Board notes that the idea of radial movement of the jaws was introduced into claim 1 in the first amendment of the claims by the patent proprietor during the opposition procedure in March 1999. In a letter of reply filed in September 1999 the opponent responded by arguing that D5 discloses the feature of a

clamping jaw of which the movement is "completely radial". If the respondent nevertheless had considered that an additional search for more relevant prior art in response to the introduction of this feature into claim 1 would have helped its case, it would have had more than adequate time in which to perform such a search itself.

Novelty

6. D4 relates to a wire drawing and feeding apparatus 10 which supplies drawn wire to a processing apparatus such as a press 12. The drawing and feeding apparatus comprises a carriage 26 which is reciprocally movable on guides 27 by means of a driving device 30 and which carries a drawing die 21. Two hydraulically operated wedge-type wire clamps 22, 35 are provided, one being fixed on the carriage downstream of the die and the other being stationary and downstream of the carriage.
- 6.1 The wedge-type clamps are associated with hydraulically operated actuators 49, 61 which drive the respective pairs of jaws into a wire gripping position. The jaws are driven by the actuators essentially parallel to the axis of the wire but are subjected additionally to movement in a radial direction by the wedging action of the converging walls 42a, 42b, 58a, 58b which surround the jaws and are thereby brought into gripping engagement with the wire. By virtue of the shallow angle of the taper which is necessary to ensure efficient gripping of the wire the radial movement is small in comparison with the axial movement and the path of movement of the jaws is orientated at an angle of almost 90° to the radial plane. It follows that the

jaws are not moveable towards and away from the wire "in a radial plane" as required by claim 1.

6.2 The disclosure of D4 is clearly that the wire drawing and feeding apparatus to which the document relates and which in the drawings carries the reference 10 is a separate apparatus from the processing machine having the reference 12. Figure 1, which is the only drawing in which the processing machine is shown, illustrates that they are physically separate. Whilst the drawing and feeding apparatus supplies the wire directly to the processing machine such that the two would operate in synchronism, there is no suggestion that the two should be combined into a single machine. The argument of the respondent that the text of column 2, lines 45 to 50 is a disclosure separate from the drawings cannot be accepted because it begins by referring to Figures 1 and 2. Moreover, even when considered alone that text has no content which the skilled person would understand as an explicit disclosure of a single machine.

6.3 The Board concludes that the subject-matter of claim 1 is novel with respect to the disclosure of D4 (Article 54 EPC).

Inventive step

7. The operation of the wire drawing and feeding machine according to D4 is essentially the same as that according to the contested patent in respect of the normal drawing operation. In D4 the reciprocally movable carriage 26 carries a wedge-type clamp 35 and a drawing die 21 located rearward and upstream of the

clamp 35. A stationary wedge-type clamp 22 serves to grip the wire whilst the carriage moves rearwards to draw a section of wire following which the clamp 35 grips the drawn section of wire, the stationary clamp 22 releases and the carriage moves forward again, thereby feeding the wire. According to D4 the force which must be applied to the wire for drawing it, and which the stationary clamp 22 must withstand, is substantially greater than that involved in feeding the wire, to which the clamp 35 on the carriage is subjected. For example, feeding 5/8-inch diameter wire is said to require only 600 to 700 pounds of thrust whereas drawing the same wire requires 6,500 pounds (D4 column 5, lines 50 to 54 and 66 to 74). In the machine according to D4, at the commencement of the drawing operation the forward end of the wire is reduced in diameter and entered into the drawing die. A third clamp 38, which is stationary and is located upstream of the carriage, is operative at this time and serves to grip undrawn wire whilst the drawing die moves rearwards over the reduced diameter, forward end of the wire, whereby the wire is pushed through the die. Subsequent to this "push-pointing" operation the clamp 35 is rendered inoperative and the normal drawing operation continues.

According to the appellant's submissions a device of this kind suffers from the drawbacks that:

- the wire feeding and drawing machine is separate from the processing machine, so that the whole device occupies an undesirably large area;

- more importantly, the movable feeding clamp 35 and the stationary clamp 22 are of the wedge type and therefore can be moved to their gripping position only after some axial displacement. This axial "play" does not allow a very accurate feeding of the drawn wire without the use of a stock gauge.

Accordingly, starting from this prior art document, the technical problem to be solved by the present invention may be seen in providing a device which overcomes these disadvantages, i.e. which occupies less space and which improves the accuracy of feeding the drawn wire, without requiring the use of a stock gauge.

This problem is in essence solved by the following features stated in claim 1:

- the supply mechanism, the wire drawing mechanism, the cutting mechanism and the press mechanism are all combined into one single machine; and
- each of the two pairs of clamping jaws has one clamping jaw that is movable in a radial plane.

8. D5 sets out to address problems which arise during the "push-pointing" operation for introducing the wire into the die.

8.1 In the device according to D5 an additional clamp 14 is introduced which is located adjacent to and downstream of the drawing die, but upstream of the draw carriage 31. When the reduced diameter end of the wire has been fed through the drawing die it is gripped by the additional clamp 14 and subsequent rearward movement of

the die draws an initial segment of wire. Following retraction of the jaws of the additional clamp 14 the drawn segment is fed forward to the clamp of the draw carriage 31 in order that the normal drawing operation can take place. The additional clamp 14 has at least one jaw movable in a radial plane by means of a motor which drives a threaded shaft engaging a screw thread, thereby enabling the clamp to be held in a retracted position during the normal drawing operation. Although the additional clamp has a jaw movable in a radial plane, the clamp in the draw carriage, which does not form part of the invention according to D5, is shown as being of a conventional wedge-type. Moreover, the additional clamp is illustrated in the figure as having toothed jaws which are considerably shorter than those of the clamp on the draw carriage, although both clamps must be capable of holding the wire immobile during the drawing operation. According to D5 these toothed jaws act only on the initial "pointed" segment of wire which would be discarded and so any damage to this segment of the wire would not be of importance. However, the skilled person would recognise that, whilst the combination of the toothed jaw and the motor driven screw thread would achieve satisfactory immobilisation of the wire, the clamping force necessary to satisfactorily immobilise the wire when using jaws which would not damage the surface of the drawn wire would require a considerably higher clamping force for which the jaw driving mechanism is not obviously suitable. It follows that D5 contains no teaching to employ a clamp having a jaw movable in a radial plane during the normal drawing operation and the skilled person would receive no encouragement to introduce such a clamp in place of the existing clamps 22, 35 in D4.

9. D9 relates to a stock feed apparatus having a stationary clamp and a linearly reciprocating clamp which operate together to intermittently move the stock to a cutter. Each clamp comprises a fixed jaw and a jaw which is movable in a radial plane. The aim of D9 is to provide a feed apparatus in which the feed accuracy is sufficient that no stock gauge is required and to this end it is stressed that the clamping jaws are of sufficient length that no slippage occurs between the stock and the jaws. However, since the apparatus of D9 does not include a drawing die the clamps must resist slippage only when applying axial forces involved in feeding the wire. According to D4 the axial force which must be applied to feed the wire may be in the range of 600 to 700 pounds for 5/8-inch stock (see column 5, lines 70, 71). The stationary clamp 22 in D4, on the other hand, must be capable of firmly holding the wire when subjected to the forces involved in the drawing process, which are substantially greater than those necessary merely to feed the wire (D4 mentions 6,500 pounds thrust for 5/8-inch wire, see column 5, lines 50 to 54). Since D9 mentions that the clamps disclosed therein already are of a length which has been chosen in order to provide sufficient axial force for feeding the wire the skilled person would appreciate that they would not be suitable for applying sufficient axial force for drawing the wire. In the light of these differences between the duties of the clamp 22 in D4 and the clamps in D9 the Board considers that the skilled person would not consider the clamps disclosed in D9 as being suitable to replace the clamp 22 of D4. Moreover the skilled person faced with the problem of improving the accuracy of feeding the drawn wire to the

wire processing part in a wire drawing, feeding and processing machine would not have been encouraged to consider the apparatus disclosed in D9 since such apparatus does not include a drawing die.

10. The Board therefore concludes that the subject-matter of claim 1 involves an inventive step (Article 56 EPC). Since dependent claims 2 to 5 contain all features of claim 1 this applies equally to those claims.

Order

For these reasons it is decided:

1. The decision under appeal is set aside.

2. The case is remitted to the first instance with the order to maintain the patent on the basis of the following documents:
 - claim 1 submitted at the oral proceedings;
 - claims 2 to 5 filed with a fax of 16 May 2003;
 - description submitted during the oral proceedings;
 - drawings as granted.

The Registrar:

The Chairman:

S. Fabiani

M. Ceyte