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D E C I S I O N
of 9 December 2003

Case Number: T 0082/02 - 3.2.3

Application Number: 95926048.0

Publication Number: 0782685

IPC: F25C 3/04

Language of the proceedings: EN

Title of invention:

Method and apparatus for artificial making of snow

Patentee:

LENKO L NILSSON

Opponent:

SUFAG Sport- und Freizeitanlagen GmbH

Headword:

-

Relevant legal provisions:

EPC Art. 54, 56

Keyword:

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

Decisions cited:

-

Catchword:

-



Case Number: T 0082/02 - 3.2.3

D E C I S I O N
of the Technical Board of Appeal 3.2.3
of 9 December 2003

Appellant: LENKO L NILSSON
(Proprietor of the patent) P.O. Box 3084
S-831 03 Östersund (SE)

Representative: Avellan-Hultmann, Olle
Ehrner & Delmar Patentbyrå AB
Box 10316
S-100 55 Stockholm (SE)

Respondent: SUFAG Sport- und Freizeitanlagen GmbH
(Opponent) Bregenzer Str. 5
AT-6921 Kennelbach (AT)

Representative: Atzwanger, Richard, Dipl.-Ing.
Patentanwalt
Mariahilfer Strasse 1c
AT-1060 Wien (AT)

Decision under appeal: Decision of the Opposition Division of the
European Patent Office posted 28 November 2001
revoking European patent No. 0782685 pursuant
to Article 102(1) EPC.

Composition of the Board:

Chairman: C. T. Wilson
Members: U. Krause
J. P. B. Seitz

Summary of Facts and Submissions

- I. The appeal contests the decision of the Opposition division dated 28 November 2001 to revoke European patent No. 0 782 685. The proprietor of the patent (hereinafter denoted Appellant) filed the notice of appeal on 18 January 2002 and paid the appeal fee on the same day. The statement of the grounds of appeal was submitted on 19 March 2002.
- II. The opposition had been based on the grounds of lack of novelty and inventive step (Article 100(a) EPC) and of insufficient disclosure (Article 100(b) EPC). The following prior art was cited by the Opponent (hereinafter denoted Respondent):

D1: US-A-4 223 836

D2: Brochure of LENKO, Sweden, "LENKO 820: Faible consommation d'énergie pour ce "faiseur" de neige", allegedly published 1985

D3: Copy of a manual "LENKO 820 Snökanon Snow maker Schneekanone", 31 pages, undated

D4: Journal "Ski Area Management", January 1993, page 27

D5: US-A-4 634 050

D6: US-A-5 322 218

D7: US-A-4 593 854

The Opposition division held that the grounds of Article 100(b) EPC did not prejudice the maintenance of the patent on the basis of amended claims submitted with letter of 11 April 2000 but that the subject-matter of the amended independent claims 1 and 4 lacked novelty in view of document D2.

III. With the statement of the grounds of appeal the Appellant submitted a set of photographs showing conventional and improved snow guns (Pictures 1 to 10).

With its response to the statement of the grounds of appeal the Respondent made reference to the following further documents:

D8: Copy of manual "LENKO 820 Snökanon Snow maker Schneekanone", parts list and drawing (2 pages)

D9: Brochure of LENCO, Sweden, "LENCO 880 Niederdruckschneekanonen, Der Welteroberer für unübertroffenen haltbaren Schnee und niedrigen Kosten", having the date of 18 April 1991 stamped thereon

D10: Copy of manual „LENKO 880 Snökanon Snow maker Schneekanone", parts list and drawing (2 pages)

D11: Brochure of LENCO, Sweden, "Wirtschaftlicher Schnee" (LENCO 2000), with handwritten date "20.4.93"

as well as a statutory declaration relating to the public availability of documents D9 and D11 as from the dates marked thereon.

The Board informed the parties of its preliminary opinion by a communication pursuant to Article 11(2) RPBA on 24 January 2003.

During oral proceedings held on 9 December 2003 the Appellant submitted a new set of claims, including two independent claims 1 and 4 which are worded as follows:

- "1. Method for artificial making of snow by means of a snow making machine (1) comprising a series of bulk water nozzles (8) arranged to provide a tubularly extending flow (2) of bulk water drops which are moved along by an inner flow (3) of feeder air, and a series of atomizing nozzles (10) arranged to provide a flow (5) of super cooled nuclei, characterized by the steps of
- providing, by means of the atomizing nozzles (10), a flow (5) of super cooled nuclei, which are moved along by a flow (6) of ambient air flowing past a nose cone (9), and
 - moving, by means of said ambient air flow, said nuclei out from the snow making machine in the form of a shell (5) of nuclei extending circumferentially round the flow (2) of bulk water drops,
 - mounting said atomizing nozzles (10) radially outside the bulk water jet nozzles (8), downstream the same, as seen in the flow direction, and adjacent the tip of the nose cone (9), which sealingly engages the periphery of the snow making machine so that no air can enter from behind and sweep past said atomizing nozzles (10), and which is designed so as to

provide a "back zone" or "static eddye" zone (Z) at the downstream end of the nose cone tip, in which zone (Z) the flow speed of air is almost zero, and

- injecting into said zone the atomized water drops from the atomizing nozzles (10) and in which the atomized water drops can be super cooled without being influenced by the flows of ambient air (6) or water drops (2)."

- "4. A snow making machine (1) for executing the method according to any of claims 1-3, comprising a series of bulk water jet nozzles (8) arranged so as to provide a circumferentially extending flow (2) of bulk water drops, a fan for providing a conveyor air flow (3) for moving said flow (2) of bulk water drops forwardly, and a series of atomizing nozzles (10) arranged to provide a flow (5) of super cooled nuclei, characterized in that the snow making machine is formed with a nose cone (9) having a streamline shape and formed as a cover which sealingly engages the periphery of the snow making machine thereby providing a "back zone" or a "static eddye" having practically still standing air at the tip of the nose cone, and so that no air can enter from behind and sweep past the atomizing nozzles (10), and in that the atomizing nozzles (10) are distributed over a ring of nozzles extending round the snow making machine at or adjacent the tip of the nose cone (9) and downstream the bulk water jet nozzles (8) and radially outside the series of bulk water nozzles (8)."

IV. The Appellant requests that the decision under appeal be set aside and that the patent be maintained according to his main request filed during the oral proceedings.

The Respondent requests that the appeal be dismissed.

V. The arguments brought forward by the parties in support of the corresponding requests can be summarized as follows:

Appellant:

The subject-matter of the independent claims was distinguished from the conventional snow guns LENCO 820 or LENCO 880, as shown for example in D2 or D9, by the nose cone which, due to its shape and its sealing engagement with the periphery of the snow making machine, prevented ambient air from sweeping past the atomizing nozzles, and created a static eddy zone in which the spray from the atomizing nozzles can form super cooled nuclei which, thereafter, are moved along by ambient air flowing past the nose cone. Neither such a sealing engagement nor its function in creating the static eddy zone was derivable from the prior art. As shown in D8, D9 and D10 and in particular in pictures 3 and 4, the conventional snow guns LENCO 820 and LENCO 880 comprised a curved cone part with a rubber collar extending partly around the periphery of the snow making machine, leaving out a considerable portion of the annular gap between the cone part and the periphery of the snow making machine for the water supply tubes. Thus, the cone part was not a streamline cover which

could provide, in cooperation with the rubber collar, a seal between the cone part and the snow making machine.

Further, this rubber collar was provided at the upstream end of the nose cone, whereas it was evident not only from the figures of the patent and from the function to prevent air from sweeping past the atomizing nozzles, but also from the impossibility to seal the upstream end around the water supply tubes, that the claimed sealing engagement should refer to the downstream end of the nose cone adjacent the atomizing nozzles. The function of the known rubber collar was different in that it served the purpose of preventing cold ambient air from entering below the nose cone which could cause freezing of the nozzles, rather than affecting the flow pattern downstream of the nozzle as in the patent.

Respondent:

It was unclear which feature of the amended independent claims was novel or involved an inventive step vis-à-vis the known snow guns Lenco 820, Lenco 880 and Lenco 2000, as shown in documents D2, D4, D9 and D11. The rubber collar or solid ring provided at the upstream end of the nose cone of these snow guns had a sealing function by preventing air from entering the space below the nose cone. As a consequence, no air would leave this space at the downstream outlet end and thereby disturb a static eddy zone developed downstream of the atomizing nozzles between the inner flow of feeder air and water drops and the outer flow of ambient air.

If the distinguishing feature was seen in sealing the entire periphery of the snow making machine, this difference was obvious for a skilled person intending to further reduce the risk of freezing the water lines and nozzles within that space.

If the distinguishing feature was seen in a sealing engagement of the nose cone at its downstream end, an unallowable addition was made to the original disclosure which mentioned, on page 6, lines 19 to 22, a sealing engagement for preventing air from entering behind and sweeping past the atomizing nozzles, suggesting sealing of the upstream end of the nose cone. The schematic figures were not a reliable source of information and did not show any sealing device. Nevertheless, a seal at the downstream end of the nose cone had to be seen as being an equivalent solution to a seal at the upstream end for the problem of protecting the water lines and nozzles from the cold ambient air.

Reasons for the Decision

1. The appeal complies with the provisions of Articles 106 to 108 EPC and of Rules 1(1) and 64 EPC and is, therefore, admissible.
2. As to the disclosure of the claimed subject-matter in the application as filed, support can be found in original claims 1, 3 and 5, substantially corresponding to granted claims 1, 3 and 5, for amended claim 1 and in original claims 6 to 8, substantially corresponding to granted claims 6 to 8, for amended claim 4.

Additionally, the feature concerning the sealing engagement of the nose cone with the periphery of the snow making machine to prevent air from entering and sweeping past the atomizing nozzles was taken from page 6, lines 19 to 22, of the application as filed. Thus, a reference to a flow speed of almost zero in the eddy zone is provided not only in a specific context on page 8, line 2, of the original application, as argued by the Respondent, but also in a general manner in original claims 3 and 8.

The dependent claims 2, 3 and 5 to 8 are based on original claims 2, 4 and 8 to 10.

The amended claims are, therefore, not open to objection under Article 123(2).

The Board concurs with the finding, in the decision under appeal, that the passage relating to the cooling and freezing of the drops of water in the flow of bulk water drops by the nuclei successively and over a relatively long way of movement, which was omitted from the granted claim 1, defines in rather vague and broad terms a necessary consequence of the formation of a shell of super cooled nuclei extending circumferentially around the flow of bulk water drops, having no limiting effect on the scope of protection, and omission thereof was, therefore, allowable in view of Article 123(3) EPC.

3. The objection raised by the Respondent under the ground of insufficient disclosure related to the above mentioned omitted passage in claim 1 and is, therefore, no longer relevant. No further argument was presented

by the Respondent under this ground and, considering the detailed description of the various embodiments, the Board cannot see any reason why a skilled person should not be able to carry out the invention claimed in the amended claims.

4. The objections concerning a lack of novelty and inventive step set out in the decision under appeal and raised by the Respondent are based on a prior public disclosure of snow guns LENCO 820, LENCO 880 and LENCO 2000 of the Appellant in documents D2 to D4 and D8 to D11. According to the advertisement on page 27 of D4 these three types of snow guns were marketed on or before 1991. It is, therefore, credible that the other documents, being brochures typically used in selling these snow guns (D2, D9 and D11) or operator's manuals typically handed out when delivering the snow guns (D3, D8 and D10), were likewise published before 1991. Additional evidence on the public availability of documents D9 and D11 before the priority date of the patent under appeal (21 September 1994) is provided by the statutory declaration furnished by the Respondent. Since these facts were not challenged by the Appellant and no counterevidence is on file, the Board is satisfied that documents D2 to D4 and D8 to D11 have been available to the public before the priority date of the patent and, therefore, form part of the state of the art according to Article 54(2) EPC.

5. A comparison of the corresponding brochures and operator manuals reveals that the snow guns of the three types LENCO 820, 880 and 2000 have the same basic structure comprising a tubular housing (1), a fan (7) within the housing for providing an inner feeder or

conveyor air flow from an inlet end of the housing to an outlet end, a series of bulk water jet nozzles (21) arranged at the outlet end so as to provide a circumferentially extending flow of bulk water drops to be blown out of the outlet end by the feeder or conveyor air flow, and a series of atomizing nozzles (28) distributed over a ring (27) of nozzles extending around the snow making machine downstream and radially outside of the bulk water jet nozzles (21) and arranged to provide a flow of super cooled nuclei (the reference signs refer to the numbers denoting the corresponding parts in the drawings and lists of the parts in D3 and D10).

It can be further seen in the pictures in D2 and D9 that the outlet end of the housing is surrounded by a cover (36) extending up to the atomizing nozzles and covering the nozzle ring as well as water supply lines for the bulk water jet nozzles and for the atomizing nozzles. The cover is formed as a smoothly curved cone converging towards the nozzle side where its edge or tip is closely adjacent to the atomizing nozzles, and thereby corresponds to the nose cone (9) depicted in the figures of the patent, having the same streamline shape allowing the ambient air to flow along the outer surface to merge with the flow of air and bulk water drops and with the super cooled nuclei discharged from the atomizing nozzles at a point downstream thereof.

6. In the decision under appeal it was stated that a sealing engagement of the cover with the periphery of the snow making machine could be derived from the photos on page 3 and at the bottom left side of page 2 of D2. The Board cannot adopt this view. In fact, a

disclosure in a document must be clear and unambiguous, and the photographs in D2 are just not detailed enough to enable a skilled person to determine with a sufficient degree of certainty whether the cover was, or should be, in sealing contact with the ring of atomizing nozzles or not. It cannot be excluded that an annular gap exists between the ring of atomizing nozzles and the tip of the nose cone, as shown in the pictures 3 and 4 submitted by the Appellant. Further, the text mentions neither such a sealing contact nor any effects which might be conditional on the same, suggesting to the skilled person that such a sealing contact should be provided. The same applies to the photographs in documents D4 and D9. It cannot, therefore, be derived from the documents describing the LENCO 820, 880 and 2000 snow guns that the nose cone is in sealing engagement with the snow making machine at the outlet end adjacent to the atomizing nozzles.

7. It is, however, noted that neither the method claim 1 nor the apparatus claim 4 of the patent is restricted to a sealing engagement at this point. According to claim 1 the nose cone "sealingly engages the periphery of the snow making machine so that no air can enter from behind and sweep past said atomizing nozzles" and is designed "so as to provide a back zone or static eddy zone (Z) at the downstream end of the nose cone tip, in which zone (Z) the flow speed of air is almost zero". This wording makes clear that the sealing engagement could be anywhere at the nose cone and periphery of the snow making machine as long as the desired effect of preventing air from entering from behind and sweeping past the atomizing nozzles is achieved. Claim 4 differs slightly from claim 1 in that

the two effects of creating the eddy zone and preventing air from entering from behind are associated to the combination of two measures, the sealing engagement and the streamline shape of the nose cone, instead of specifically associating the effect of the eddy zone to the shape of the nose cone and the effect of preventing the air from entering from behind to the sealing engagement, as in claim 1. However, this wording cannot further define the sealing engagement either because the effect of preventing air from sweeping past the atomizing nozzles, which might affect the flow in the eddy zone, is independent of how and where the nose cone is in sealing engagement with the periphery of the snow making machine.

8. The Appellant argues that a sealing engagement of the nose cone with the snow making machine at its downstream end adjacent to the atomizing nozzles, although not explicitly mentioned in the patent, was evident not only from the figures of the patent and from the function to prevent air from sweeping past the atomizing nozzles, but also from the impossibility to seal the inlet end around the water supply lines.

These arguments are not convincing. Firstly, there is no clear disclosure of such a sealing engagement in the figures which in most cases show the nose cone (9) to extend up to the housing (7) of the snow making machine at its upstream end and to the atomizing nozzles (10) at its downstream end, without any sealing means being provided. In Figure 6 a small gap seems to exist at the upstream end between the nose cone and the housing but it is not clear whether this gap is intentional or due to an inaccuracy of the rather schematic drawing, in

particular as a further contour line was missing for a gap to be correctly indicated. Thus, Figure 6 cannot be taken as a reliable source of information on the sealing engagement. As a consequence, the drawings do not suggest a particular point of engagement between the nose cone and the snow making machine.

Secondly, the present case is distinguished from those cases in which an amendment of the claims is effected by introducing a feature taken from the drawings. In the present case no such feature was in fact introduced into the claims but it is argued that the claims should be construed as if this feature was included. For a claim to be construed in this way the feature in question must be implicit, i.e. it must be immediately evident for a skilled person that, in view of the objects or effects to be achieved, no other interpretation of the claims was possible. It was set out above in point 7 that the object of the sealing engagement to prevent air from sweeping past the atomizing nozzles and possibly from disturbing the static eddy zone was achieved by positioning the seal either at the upstream or at the downstream end, giving no preference to either position. As to any restrictions imposed by the presence of the water supply to the nozzles, it is noted that the patent does not show the water supply and, therefore, the skilled person has no reason to consider any problems arising therefrom. In any case, sealing around water lines, if present, was not a technical problem which was known to be unsolvable, thereby excluding any embodiment involving such a seal.

In the absence of any evidence to the contrary derivable from the drawings and also from the description, the claims must be construed, in regard of the sealing engagement, as they are worded, including any sealing engagement preventing air from entering the nose cone "from behind", thereby suggesting that the seal should be at the upstream end of the nose cone which is the only end where air may enter during operation of the snow making machine.

9. Several documents relating to the Lenco 820 and 880 snow guns show a rubber collar provided at the upstream end of the nose cone. It can be seen for example in the various photographs on pages 2 and 3 of document D9 that this rubber collar, being referred to by the number 62 in the parts list of D10, is mounted to the nose cone and bridges the gap between the nose cone and the periphery of the snow gun at the upstream end of the nose cone around nearly the entire circumference except at a zone at the bottom where water lines and fittings for the water supply to the nozzles are disposed. As pointed out by the Appellant, this rubber collar serves the purpose of suppressing a flow of cold ambient air to the water lines and nozzles below the nose cone to reduce the risk of freezing. It follows that this rubber collar forms part of the nose cone and engages the periphery of the snow making machine, thereby at least to some extent preventing air from entering the space below the nose cone from the upstream end thereof and flowing towards and past the atomizing nozzles. Owing to the free portion at the bottom, however, the engagement is not a sealing engagement as defined in claims 1 and 4 by specifying

that no air can enter from behind and sweep past the atomizing nozzles.

Since a snow making method and machine comprising all the features of claims 1 and 4 cannot be derived from the other available documents either, the subject-matter of claims 1 and 4 is considered to be new.

10. Whilst being novel, the subject-matter of claims 1 and 4 does not involve an inventive step because it was obvious for a skilled person to modify the engagement of the rubber collar with the periphery of the snow making machine so as to provide a sealing engagement as defined in those claims. Indeed, once the cold ambient air flowing to the atomizing nozzles from the upstream end of the nose cone was identified as the cause for freezing of the nozzles and a solution to this problem was found, as in D9, by disposing a collar blocking the entrance of the cold air, the skilled person would only have to follow this idea and modify the collar to improve the engagement thereof with the periphery of the snow making machine to thereby completely block the entrance if it turned out that the engagement of D9 was insufficient to prevent freezing, for example in the case of very low ambient temperatures. The skilled person was not hindered to proceed in this way by the presence of the water supply lines because feeding such lines through a resilient seal such as the rubber collar of D9 is not an unusual measure and an example is in fact shown in the left one of the four photographs in a row on pages 2 and 3 of D9 where a cable is fed through the upper side portion of the rubber collar.

11. The Appellant argues that the rubber collar of D9 cannot render the subject-matter of claims 1 and 4 obvious because of its different function to prevent cold ambient air from flowing below the nose cone which would cause freezing of the nozzles, rather than provide a static zone having practically still standing air at the tip of the nose cone. This argument does not seem to apply to claim 1 which defines the sealing engagement only in relation to the effect that no air should enter from behind and sweep past the atomizing nozzles. Claim 4, on the other hand, additionally refers to a static zone at the tip of the nose cone. It is not disputed that any air flowing from the upstream end of the nose cone to its downstream end past the atomizing nozzles would have a disturbing effect on the flow pattern in a zone which would otherwise form a "static zone" if there was no such air flow. Clearly, the region downstream of the nose tip in D9 is such a zone because it is positioned between the inner flow of feeder air and bulk water drops and the outer flow of ambient air guided by the nose cone to meet the inner flow at some distance downstream of the nose tip. As to the air flow sweeping past the atomizing nozzles, it is noted that the space below the nose cone in D9 is confined whereby the air entering this space from the upstream end may flow out only at the downstream end and no air may flow out of the downstream end if it is prevented from entering at the upstream end. Thus, the obvious sealing engagement of the nose cone at the upstream end implies that no air will flow out at the downstream end, thereby allowing the static zone at the tip of the nose cone to be created, and the effect of this sealing engagement on the formation of the static zone at the tip of the nose cone, which may have been

discovered by the Appellant, is merely a logical consequence of the obvious sealing without having inventive merits on its own.

12. In summary, the lack of inventive step in the subject-matter of claims 1 and 4 prejudices the maintenance of the patent on the basis of the amended claims.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chairman:

D. Sauter

C. T. Wilson