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**Datasheet for the decision of 23 November 2022**

**Case Number:** T 2075/18 - 3.4.01

**Application Number:** 11773563.9

**Publication Number:** 2632548

**IPC:** A61N5/06, A61B18/20, H05B41/34, H05B41/30, A61B18/00

**Language of the proceedings:** EN

**Title of invention:**
SKIN TREATMENT SYSTEM

**Patent Proprietor:**
Koninklijke Philips N.V.

**Opponents:**
Cyden Limited
The Procter & Gamble Company

**Headword:**
Optical skin treatment / Koninklijke Philips N.V.

**Relevant legal provisions:**
EPC Art. 100(a), 56

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

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**Case Number: T 2075/18 - 3.4.01**

# D E C I S I O N
# of Technical Board of Appeal 3.4.01
# of 23 November 2022

| | |
|---|---|
| **Appellant:** (Opponent 1) | Cyden Limited<br>Technium 1<br>Kings Road<br>Swansea South Wales SA1 8PH (GB) |
| **Representative:** | Baker, Thomas Edward<br>Murgitroyd & Company Cardiff<br>Churchill House<br>Churchill Way<br>Cardiff CF10 2HH (GB) |
| **Appellant:** (Opponent 2) | The Procter & Gamble Company<br>One Procter & Gamble Plaza<br>Cincinnatti, Ohio 45202 (US) |
| **Representative:** | Witte, Weller & Partner Patentanwälte mbB<br>Postfach 10 54 62<br>70047 Stuttgart (DE) |
| **Respondent:** (Patent Proprietor) | Koninklijke Philips N.V.<br>High Tech Campus 52<br>5656 AG Eindhoven (NL) |
| **Representative:** | Eisenführ Speiser<br>Patentanwälte Rechtsanwälte PartGmbB<br>Johannes-Brahms-Platz 1<br>20355 Hamburg (DE) |
| **Decision under appeal:** | **Interlocutory decision of the Opposition Division of the European Patent Office posted on 7 June 2018 concerning maintenance of the European Patent No. 2632548 in amended form.** |

**Composition of the Board:**

| | |
|---|---|
| **Chairman** | B. Noll |
| **Members:** | A. Medeiros Gaspar |
| | D. Rogers |

## Summary of Facts and Submissions

I. Both opponent 1 (Cyden) and opponent 2 (Procter&Gamble) appealed the Opposition Division's interlocutory decision, that European patent EP 2 632 548 as amended according to the auxiliary request 2 met the requirements of the EPC. They request that the decision of the Opposition Division be set aside and that the patent be revoked.

II. According to the opponents the request found allowable by the Opposition Division infringes Article 123(2)EPC, comprises claims defining methods falling within the exceptions to patentability defined in Article 53(c) EPC and, furthermore, defines subject-matter that is neither novel nor inventive having regard to the different disclosures on file, among which that of document O1 (WO2005/036745 A2).

III. The proprietor (respondent in these appeals) requests that the appeals be dismissed (main request), or alternatively, that the decision be set aside and the patent be maintained on the basis of auxiliary request I or auxiliary request II, both filed after notification of the summons for oral proceedings before the Board, to address the Article 53(c) EPC issue.

IV. Independent claim 10 of the main request reads:

*Skin treatment system (1), comprising:*
*a flashlamp {2);*
*a discharge capacitor (4) connected in parallel with the flashlamp;*

*a power source (3) for charging the capacitor;*
*a first controllable switch (5) arranged in an electrical connection between the flashlamp and the capacitor;*
*a second controllable switch arranged in a connection between the power source and the capacitor;*
*a control device (6) for controlling the first and the second controllable switch;*
*ignition means for igniting the flashlamp;*
*wherein the control device is designed to close the second switch for charging the capacitor and to subsequently operate according to a cycle of:*

- *closing the first switch;*
- *after the first switch has been closed, triggering the ignition means at a start time (t0) so as to start a discharge in the flashlamp, said discharge reaching a maximum current density at a first moment in time (t1) and having a natural extinction time (t2);*
- *opening the first switch at a moment in time ($t_X$; $t_E$) later than said first moment in time (t1) but earlier than the natural extinction time (t2) so as to cut off the discharge current;*
- *closing the second switch again for charging the capacitor;*

*wherein the control device is designed to repeat said cycle; characterised in that:*
*the control device is designed to close and subsequently open the first switch only once during said cycle.*

V. Claim 10 of the auxiliary request I and claim 1 of auxiliary request II are identical to claim 10 of the main request.

## Reasons for the Decision

*The invention as described in the patent*

1. The invention relates to skin treatment systems comprising a flashlamp adapted to apply light pulses to the skin, for purposes such as, in particular, hair removal by optical follicle destruction (Patent: paragraphs [0001] and [0003]).

2. The light pulse is typically generated by discharging a capacitor, resulting in a pulse-shaped current through the flashlamp, which first quickly rises to a maximum and then slowly falls back to zero (Patent: paragraph [0009], first sentence, Figure 2).

3. The invention is said to be based on the insight that, as the current density in the lamp decreases, the spectrum of light emitted by the flashlamp gradually shifts away from the range of frequencies that are effective for hair removal (Patent: paragraph [0009]).

4. According to the invention, through operation of a first controllable switch, the conductive path from the capacitor to the flashlamp is interrupted after the maximum of current density was reached but before the natural extinction time of the discharge (Patent: paragraphs [0009],[0010] and [0025], Figure 5).

5. This minimizes the energy consumption of the device and reduces the temperature increases normally observed on both the device and the skin, due to the reflection or absorption by the skin of radiation of wavelengths that

are not effective for hair removal (Patent: paragraphs [0005] to [0008], [0019] and [0024]).

6. A second controllable switch is arranged in the connection between the voltage source and the capacitor, which is closed for recharging the capacitor between discharges (Patent: paragraph [0015]).

*Novelty of claim 10 of the main request in view of O1*

7. O1 also relates to skin treatment systems comprising a flashlamp adapted to apply light pulses to the skin (O1: page 1 lines 32 to 33; page 3 lines 1 to 5).

8. Figure 6 of O1 depicts a system comprising a flashlamp, a discharge capacitor (C1) and a power source arranged as defined in claim 10 of the main request.

9. The circuit of figure 6 further comprises additional circuitry for triggering the flash lamp (elements SCR, C2, R1, T1), operated by a zero crossing detector, and, a MOSFET (Q1), operated by a voltage comparator.

10. Operation of the SCR and the MOSFET is controlled by the voltage of the AC power source, the zero crossing detector and the voltage comparator, such that the discharge of the flashlamp is initiated when the power supply signal is less than the flashlamp extinguishing voltage, said discharge being subsequently interrupted before its natural extinction time, when the capacitor voltage drops below a set point (O1: page 7 lines 9-16 in combination with page 9 lines 6 to 9 and 18-27).

11. The opposition division saw the term "switch" employed in the claim as defining a switching function and as

not being limited to a particular implementation of this function. The board also interprets "switch" in this way.

12. Therefore the SCR and the MOSFET of figure 6 embody a first controllable switch controlled by the AC power source in combination with the zero crossing detector and the voltage comparator.

13. The circuit of figure 6 further comprises a diode D1, arranged between the power source and the capacitor. Also this diode is either in a conductive state, thereby charging the capacitor, or in a non-conductive state, depending on the AC signal.

14. Hence, also this diode can be seen to embody a second switch, one that is also controlled by the AC signal output by the power source (O1: page 9 lines 9-13, page 10 lines 5-7).

15. Therefore the argument of the proprietor, that the diode D1 can not be regarded as embodying a switch, at least not a controllable switch, is not convincing.

16. The proprietor also argued that the system of O1 does not comprise a control device that controls both the first and second controllable switches, as defined in the claim.

17. However, as explained above, the AC power source controls, in combination with the zero crossing detector and the voltage comparator, the operation of the SCR and the MOSFET, defining a first controllable switch in the sense of the claim, and it furthermore controls the operation of the diode D1, defining a second controllable switch as defined in the claim.

Hence, a control device in the sense of the claim can be identified in the circuit of figure 6 of O1.

18. O1 also discloses the circuit of figure 6 as controlling the first and second switches by repeating the following cycle of consecutive steps: closing the second switch for charging the capacitor, closing the first switch for triggering the flash lamp, opening the first switch before full discharge and closing the second switch again for recharging the capacitor again, for each period of the AC power cycle (O1: page 7 lines 9-16 in combination with page 9 lines 6-13 and 18-27; figure 7 and page 9 line 28 to page 10 line 7).

19. The proprietor argued, by reference to the disclosure of figure 7, that the operation of the circuit of figure 6 in O1 is such that the first switch is closed to discharge the flash lamp before the second switch opens again, i.e. before the capacitor is fully charged.

20. Claim 10 does not exclude however the above possibility. In fact, the claim merely defines that the first switch is to be closed subsequent to the closure of the second switch for charging the capacitor. It does not specify when will open after charging and, in particular, it does not specify whether that will happen before or after closure of the first switch.

21. The proprietor also argued that while O1 discloses the interruption of the discharge before its natural extinction time, it does not disclose said interruption as taking place after the discharge current reached a maximum. Instead it can be be inferred from figure 8b that the interruption takes place before said maximum current is reached.

22. Opponent 1, to the contrary, argued it would result from the comparison of figure 8a, depicting the current pulse resulting from a full discharge of the flashlamp, with figure 8b, depicting the current pulse of a partial discharge of the flashlamp, that the current pulse of figure 8b is interrupted after the maximum current was reached in figure 8a. Additionally, opponent 2 argued that page 10 lines 3-5 of O1 discloses the MOSFET as interrupting the current when the voltage drops below a set point, which would necessarily mean that, at that moment in time, also the current has already started to drop, i.e. that the interruption took place after a maximum current was reached.

23. The opponents' arguments are not persuasive. On one hand, it is clear, from the disclosure of figure 7 and respective text passages (O1: page 9 line 28 to page 10 line 7), that the voltage of the capacitor and the current of the flash lamp do not evolve synchronously as result of the variation of the lamps resistance during a discharge. On the other hand, a direct comparison of figures 8a and 8b, or of figures 3 and 7, does not seem appropriate, given the different time scales involved and the fact that O1 also discloses that, in the embodiment of figure 8b, capacitors larger than the ones employed in the full discharge embodiment may be employed, resulting in prolonged peak current densities (O1: page 9 lines 13-17; page 10 line 30 - page 11 line 2).

24. Instead, the Board agrees with the proprietor in that no maximum can unambiguously be identified in the current pulse depicted in figure 8b as having been

reached before the pulse was interrupted. If at all, the curve depicted appears to suggest the opposite.

25. It must hence be concluded that O1 does not disclose the system depicted in figure 6 as adapted to interrupt the discharge of the flash lamp after a maximum current density has been reached, as defined in claim 10 of the main request.

26. Therefore the subject-matter of claim 10 of the main request is new vis à vis the disclosure of O1 (Article 54(1) and 54(2) EPC).

*Inventive step of claim 10 of the main request in view of O1*

27. The opponent argued that the difference identified above does not contribute to any recognisable technical effect, since it is the interruption of the discharge before its natural extinction time that is disclosed in the patent as bringing about an advantage in terms of the device's spectral output. From that point of view, whether said interruption takes place before or after the maximum current has been reached is irrelevant.

28. This argument is not persuasive because, as disclosed in the patent, the momentary frequency spectrum of the light generated by the flashlamp depends on the momentary current density of the flashlamp (patent, paragraph [0005]). Hence, the moment of interruption of the discharge has a direct impact on the integrated spectrum of the light pulse output.

29. The patent furthermore discloses that, for the purpose of hair removal, the most useful spectrum is produced at high current levels, i.e. around the maximum of

current density (patent: paragraphs [0019] to [0021] and figures 3).

30. Hence, by allowing the discharge to continue as long as the spectrum of the generated light contains sufficient energy in the beneficial spectral regions, i.e. by allowing it to extend over said maximum current density, and interrupting it when that is no longer the case, i.e. after said maximum but before its natural extinction time, spectral output can be optimized (patent, paragraph [0024]).

31. The Board therefore sees the timing of interruption of the discharge as enabling the control of the integrated spectrum of light pulse output by the flashlamp. The interruption after the maximum of current density additionally contributes, in the context of hair removal, to an improved spectral output.

32. The skilled person willing to control or optimize the spectral composition of the pulse output by the flashlamp, would however find in O1 itself the additional teaching that, among other advantages, interrupting the discharge "provides the benefit of targeting the response desired from the flash lamp, e.g. specific spectral output" (O1: page 11 lines 7 to 12).

33. He would then consider tuning the time instance at which the discharge is interrupted to the particular application and spectral output desired. In doing so, he would consider any time instance up to the discharge's natural extinction time and, hence, also instances after the maximum current density, as defined in the claim, which he would implement, if found

advantageous for the particular application in mind, without involving inventive skills.

34. The proprietor argued that even if the skilled person would consider interrupting the pulse after the maximum current density was reached, he would not do this, because it would be incompatible with the use of an AC power source in the circuit of figure 6. Concretely, not enough time would be left for the discharge to continue, until the next cycle started.

35. This argument is not persuasive, because O1 also teaches an embodiment, also AC powered, allowing full discharge of the flashlamp before the next cycle starts (O1: figures 2 to 4, page 7 line 9 to page 8 line 8). O1 additionally teaches which considerations need to be taken into account, in terms of the frequency of the AC signal and the capacity of the capacitors employed so as to make sure that a discharge to the level wished occurs before the next cycle starts (O1: page 6 line 7 to page 7 line 8, page 9 lines 9 to 17, page 10 lines 10 to 5).

36. Hence, having regard the teaching of O1, the skilled person would have no difficulty in implementing an embodiment interrupting the pulse at a moment in time within the range defined in claim 10, for the purpose of obtaining a specific spectral output.

37. Therefore, the subject-matter of claim 10 of the main request lacks an inventive step having regard the disclosure of O1 (Article 56 EPC).

38. Consequently the main request is not allowable.

*Auxiliary requests I and II*

39. Claim 10 of auxiliary request I and claim 1 auxiliary request II are identical to claim 10 of the main request.

40. Hence, the reasons given above as to why claim 10 of the main request is not allowable also apply to claim 10 of auxiliary request I and to claim 1 of auxiliary request II.

41. The auxiliary requests are therefore, irrespective of the question of their admissibility, evidently not allowable.

*Final conclusion*

42. As none of the claim requests on file complies with the requirements of the EPC, the patent has to be revoked.

**Order**

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

1. The decision under appeal is set aside.
2. The patent is revoked.

The Registrar: The Chairman:

D. Meyfarth B. Noll

Decision electronically authenticated