

Examiners' Report on Paper A/1997

1. Background

The candidate is informed by the client in the opening sentence of the client's letter that the invention relates to dry shavers having a cutter with a reciprocating movement driven by a rotary single phase synchronous motor. It is explained that the drive mechanism linking the motor with the cutter has not only to convert rotary into reciprocating motion, but also to increase the speed of movement in order to obtain a satisfactory cutting action with a low speed motor. The use of a high speed motor is ruled out on grounds of size and cost. Although Document I (D1) discloses a shaver in which the drive mechanism converts rotary into reciprocating motion and also increases the speed of movement, the candidate is informed that this known appliance is considered to be too noisy owing to the use of meshing gear wheels. The client's invention has overcome this problem using a drive mechanism which uses a cam and cam follower.

2. Independent claim(s).

- 2.1 A good independent claim should be directed to the concept of using a cam and cam follower in a dry shaver. Claim 1 of Paper B is thus regarded as being a good solution. On the other hand, a claim directed to a drive mechanism per se, that is, the components situated between the motor and the cutter, as opposed to a dry shaver, could not be drafted in such broad terms as the claim to the shaver since, in order to be novel, the claim must specify another feature such as frequency multiplication.
- 2.2 A few candidates were tempted to draft additional independent claims. When such claims were present, they were also directed to the cam plus cam follower concept and were therefore at least unnecessary, betraying a lack of a clear conception of the inventive step. Such claims sometimes also gave rise to an objection of plurality of invention.
- 2.3 Candidates who drafted their claims in broader terms than claim 1 of Paper B generally ran into problems. Some such claims merely represented a statement of the problem to be solved or a wish to be fulfilled.
- 2.4 It was expected that candidates would either know or realise that cams and cam followers were known. The fact that the client uses the technical term "cam" as a term of the art means that it forms part of the prior art. Therefore claims which amounted to a claim for a cam and cam follower per se were regarded as lacking novelty and were marked accordingly.
- 2.5 A number of candidates provided claims which only achieved novelty over D1 by virtue of a negative definition, thus merely involving a disclaimer of the prior art. Examples are that the device is characterised in that "it doesn't include a gear wheel"; there is a "smooth contact

surface", i.e. there are no teeth, that the surfaces of the members of the drive mechanism are in contact with one another are "untoothed", and "the drive is non-circular". Such claims do not provide a solution to the problem and thus do not involve an inventive step in addition to being unclear.

- 2.6 Some claims mentioned the presence of a cam, but omitted any reference to a cam follower. This is, however, essential to the functioning of the device. A more common fault is for the claim merely to list a number of components without setting out their interrelationship. In the present case, the cam must be connected (directly or indirectly) to the motor and the cam follower must be connected (directly or indirectly) to the cutter.
- 2.7 As always, more candidates lost marks through the inclusion of unnecessary limitations in the independent claim than lost marks through attempts to draft claims too broadly. It is the opinion of the examiners that the essence of the client's invention is a dry shaver which works more quietly than that of the prior art owing to the use of a cam and cam follower in place of meshing gear wheels. Whilst it is essential for the drive mechanism to convert rotary into reciprocating movement, frequency multiplication is seen as being a secondary aspect of the invention. Thus, although, as pointed out above, this feature (or an alternative) must be present in a claim directed to a drive mechanism, this is regarded as being an unnecessary feature in a claim directed to a dry shaver. Candidates accordingly lost points for specifying the presence of a frequency multiplying or multi-lobed cam.
- 2.8 The same applies to a claim which specifies a synchronous motor. It is appreciated that the client is primarily concerned with shavers utilising synchronous motors. Nevertheless, a good candidate will realise that there may well be other compact motors either available now or which will become available during the life of the patent, which are capable of higher speeds. It is thus simply unnecessary to limit the claim to a particular form of motor.
- 2.9 A very frequent unnecessary limitation is to specify the presence of wheels on the cam follower. A moment's thought ought to tell the candidate that the drive mechanism will also function without wheels on the cam follower - perhaps not as efficiently - but it is not a requirement that the claimed structure should function well: merely that it should be capable of carrying out its intended function.
- 2.10 Other significant unnecessary limitations introduced by candidates are that the cam follower is pivotally mounted, and the presence of elastic means in the cam follower.
- 2.11 Somewhat less significant unnecessary features included specifying that the cam is connected to the motor by a drive shaft, means for maintaining contact between the cam follower and cam, the cam follower having at least two arms (i.e., one arm for engagement with the cam and one arm for engagement with the cutter), the presence of a housing and a shear foil. Although

these features are unnecessary, it was felt that they would in general be difficult to avoid carrying out the invention in practice. It is felt that candidates could avoid this type of fault by spending some time asking themselves if all the features in their independent claims are, in fact, necessary for the functioning of the device, or if some alternative could be used. An example of this is those candidates who specified that one arm of the cam follower directly engages the cutter. It is clear that it may well be desirable to include some linkage or other component between the cam follower and the cutter, so that the claim should be drafted in more general terms so as to include both direct engagement and coupling through an intermediate linkage.

2.12 **Clarity.** Candidates did not in general have too much difficulty avoiding writing claims which were seriously unclear. The main problem in this area was claims which listed components without specifying their interaction as stated above. In addition, the examiners attempt to make allowances for candidates whose mother tongue may not be that in which they are working. Some candidates attempted to avoid the use of the word "cam" and/or "cam follower" and this often resulted in a vague definition.

2.13 **Lack of Unity.** Points were deducted for sets of claims lacking unity. An example of this is a set of claims including a first independent claim directed to a shaver having a drive mechanism comprising a cam/ cam follower arrangement and a second independent claim directed to a shaver in which the drive mechanism incorporates elastic means. The instructions to candidates states specifically that the application should meet the requirements of the convention as to unity. The correct approach is to select the aspect which seems to be the most important and to suggest in a note to the examiner that the client may wish to file a separate application.

2.14 **Formal matters.** Claims without reference numerals or in one-part form or in incorrect two-part form lost some marks.

3. Proposals for separate applications

Candidates apparently feel that they cannot lose anything by suggesting one or more ideas for separate applications. Notwithstanding the remarks in paragraph 2.13 above, none of the suggestions in this year's exercise were felt by the examiners to be worth any points.

4. Notes to the examiner

A number of candidates also appear to be unable to decide on the exact scope of their main claim and attempt to overcome this by writing notes to the examiner which it is hoped will broaden or otherwise affect the scope of the claims as drafted. This is not accepted by the examiners as it would give such candidates an unfair advantage of having in effect more than one try at writing a good claim. The

independent claims must be construed in the light of the dependent claims and the description. On the other hand, if a candidate makes a note to the effect that he has understood a particular term to have a particular meaning, the examiners considered it to be appropriate to construe that term when used in claims as having that meaning.

5. Dependent claims

5.1 Insofar as the following features had not already been included in the independent claim, it was felt to be appropriate to have dependent claims for the following features of the cam follower:-

- (i) means for maintaining the cam follower in contact with the cam, i.e. a spring or a second point of contact with the cam;
- (ii) wheels in contact with the cam surface;
- (iii) the presence of elastic material (the alternatives are: elastic tyre or ring; elastic arm(s) and elastic wheel mounting); and
- (iv) pivotal mounting.

5.2 Claims for the following features of the cam itself:-

frequency multiplication as such and alternative cam shapes (i.e. elliptical, triangular or square).

5.3 A claim specifying that the motor is a (single phase) synchronous motor.

5.4. In order to earn good marks, the dependent claims should provide a broad definition and consequently a good fall back position by claiming the features separately. The claims should also be structured in such a way as to provide intermediate fall back positions. Thus, for example, in order to claim the cam aspects properly, a dependent claim should refer to the function of frequency multiplication and claims setting out how this is achieved (i.e. by the use of a multi-lobed cam) should be dependent from this claim. Further claims to individual cam shapes could then follow.

5.5 Points were deducted for incorrect dependencies, bad claim structure and the presence of an excessive number of trivial claims.

6. Description

- 6.1** Candidates were expected to provide a proper acknowledgement of the disclosure of DI. Although it is regarded as being satisfactory merely to state that DI discloses the features of the preamble of claim 1, good candidates produced a more precise acknowledgement, drawing attention to the relevant aspects of DI.
- 6.2** The description should include an explicit or implicit statement of the problem and solution which is consistent with the independent claim(s). This means a reference to the problem of noise. In the case of a claim restricted to the presence of a synchronous motor, the existing description provides an adequate problem and solution. For other claims it may or may not be appropriate to include a reference to the development of a sufficient speed of movement.
- 6.3** The Instructions to Candidates requires support for the independent claim(s) only. Thus, all references to the dependent claims were ignored in the marking. Candidates who provided detailed support for all their dependant claims were thus wasting time which could have been better spent (for example on eliminating unnecessary limitations from their independent claim - see above).

EXAMINATION COMMITTEE I

Candidate No.

StudentBounty.com

Paper A (Electricity/Mechanics) Schedule of marks

Category	Maximum possible	Marks awarded		Revision of marks / grade (if any)	
		Exr	Exr	Exr	Exr
Independent claims	24				
Dependent claims	14				
Description	10				
Total	48				
Corresponding Grade					

Translation of marks into grades

Mark	Grade
0 - 11	7
12 - 17	6
18 - 23	5
24 - 29	4
30 - 35	3
36 - 41	2
42 - 48	1

Marking by further examiners if appropriate

	Independent claims	Dependent claims	Description	Total	Grade
Examiner					
Examiner					

Remarks (which must be given if both the following requirements are fulfilled:

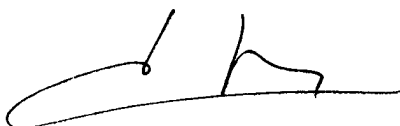
- (a) the grades awarded by the two individual examiners before their discussion differ by two grades or more;
- (b) the marks awarded by at least one of the two individual examiners have been changed during their discussion.)

If marks are revised, a brief explanation should be given.

Sub-Committee for Electricity/Mechanics agrees on _____ marks and grade _____

Grade recommended to Board _____

The Hague, 4 September 1997



J. Combeau - Chairman of Examination Committee I