

T 167 bis



Case Number: T 108 / 82

DECISION
of the Technical Board of Appeal 3.5.1
of 26 June 1984

Appellant: James Brown & Sons Limited
Longlands Road
Longlands Middlesbrough,
Cleveland TS4 2JJ
England

Representative: J.C.H. Ellis
Mewburn Ellis & Co.
2/3 Cursitor Street
London EC4A 1BQ
England

Decision under appeal: Decision of Examining Division 053 of the European Patent
Office dated 19 May 1982 refusing European patent
application No 78300834.5 pursuant to Article 97(1)
EPC

Composition of the Board:

Chairman: G. Korsakoff
Member: J. van Voorthuizen
Member: P. Ford

Summary of Facts and Submissions

- I. European patent application No. 78 300 834.5 filed on 15.12.78 (Publication No. 0 005 429), claiming priority of 16.05.78 (GB), and 16.11.78 (GB), was refused by a decision of the Examining Division 053 of the European Patent Office of 19.05.82. That decision was based on claims 1 to 3 filed on 31.12.81 and claims 4 to 6 as originally filed.
- II. The reason given for the refusal was that the subject-matter of the claims did not involve an inventive step having regard to DE-C-429 619, DE-C-545 793, GB-A-693 068 and US-A-834 824.
- III. The applicant lodged an appeal against this decision on 28.06.82. The appeal fee was paid on the same date. The Statement of Grounds was filed on 21.07.82. This statement was accompanied by three amended alternative versions A, B and C of claim 1.
- IV. In the Statement of Grounds, the applicant argued essentially that a person skilled in the art, when designing contact assemblies for use in electric furnaces which pass extremely high currents would not turn to brush gear to assist him in the design. Even if he saw DE-C-429 619 he would not be led towards the invention claimed as the problem this document deals with is completely different and it is not made clear what, if any, would be the effect of using the more or less diamond-shaped brush shown in Fig. 5 as one possibility amongst others (Figs. 1, 4 and 6).

- V. In a communication of 12.09.83 the Rapporteur of the Board of Appeal informed the applicant that version B of the three alternative claims seemed in principle to be allowable, subject to certain amendments. The applicant was also invited to amend the description to bring it in conformity with the wording of the claims and to mention the state of the art in an appropriate manner.
- VI. The applicant thereupon filed an amended claim 1 and amendments to the description on 05.11.83. He requested the grant of a European patent based on this claim 1 and claims 2-8 as originally filed.

These claims read as follows:

1. A contact assembly for feeding electric current to an electrode in an electric furnace, the assembly comprising two conducting elements disposed face to face and clamped or pressed together and which are bridged by at least one graphite insert to carry the current, each insert being retained by a groove in the face of one of the conducting elements characterised by a plurality of insert-receiving grooves in the face of one of the conducting elements, each groove having opposed side walls which converge away from the face, a separate graphite insert in each of the grooves, each insert being shaped to fit between the convergent walls of the groove, leaving one end of the insert spaced from the back of the groove and the opposite end of the insert protruding from the said face of the conducting element to make electrical contact with the face of the other of the conducting elements, the individual inserts being displaceable in their grooves independently of each other

under the influence of the contact pressure, thereby to improve the electrical connection between the two conducting elements.

2. A contact assembly according to claim 1 having at least four graphite inserts.

3. A contact assembly according to claim 1 or claim 2 wherein the side walls of the grooves are substantially planar and have a wedge angle such as to give sufficiently firm pressure between the graphite inserts and the convergent areas of the groove on the one hand and the said other of the faces on the other hand to provide adequate electrical contact between these parts, whilst permitting slight movement of the inserts under pressure to take up any inaccuracies in the said other of the faces.

4. A contact assembly according to claim 3 wherein the said wedge angle is approximately 14°.

5. A contact assembly according to any one of the preceding claims wherein the two conducting elements are the curved body of a clamp and the rounded surface of an electrode held by the clamp.

6. A contact assembly according to claim 6 wherein the electrode is a cylindrical graphite electrode.

7. A contact assembly according to claim 6 wherein the graphite is coated with aluminium.

8. A contact assembly according to any one of claims 1 to 4 wherein the two conducting elements are a contact

ting element attached to a steel billet forming an electrode and a clamp biased towards said contacting element.

- VII. The applicant observed furthermore that, in essence, the only major objection of the Examining Division which was maintained by the Board was the objection that the expression "large currents" was of uncertain scope. This objection was not made during the examination of the application and appeared for the first time in the decision to refuse. The applicant submitted that this was a substantial procedural violation and for this reason requested that the appeal fee be reimbursed.

Reasons for the Decision

1. The appeal complies with Articles 106-108 and Rule 64 EPC and is therefore admissible.
2. A contact assembly according to the preamble of claim 1 is known from GB-A-1 404 661. In this contact assembly the pads take the form of inserts retained in dovetail grooves or slots in the face of the clamp. A somewhat similar arrangement is shown in DE-C-545 793, save that there is only one insert in the clamp. GB-A-1 185 414 on the other hand provides a graphite pad which has chamfered upper and lower ends, so that the pad can be held by similarly shaped clamping members at these ends. In all these proposals the graphite pads or inserts employ the inner and outer surfaces as the electrical and thermal contact areas.
3. The use of graphite pads in this way has given rise to disadvantages in that the large opposed surface area of

both the curved and the flat faced demand a high degree of dimensional and angular accuracy which is vital in order to achieve good electrical and thermal transfers. In practice it is found that the tolerances of the various parts cannot be kept within such strict limits as to ensure good contact surfaces. Furthermore, it is difficult to ensure dirt is not trapped between the copper and the graphite insert. The present invention proposes means to avoid these disadvantages, as specified in the characterising portion of claim 1.

4. DT-C-429 619 describes the use of wedge-shaped graphite inserts carrying an electric current between two conducting elements which are pressed together. This document is concerned with the problem of reducing the friction between brushes and commutator in an electric machine and improving the mobility of the arm carrying the brushes. The shape of the brushes is, in fact, immaterial and no indication, either explicit or implicit, is given as to any advantage gained by the use of a wedge-shaped brush either generally or for this particular application.
5. The Board considers that the person skilled in the art who is confronted with the problem of making an improved electrical connection to the electrodes used in electric arc furnaces or in the electro-slag refining process could not be expected to recognise that the shape shown merely in the drawings of the DT patent could solve this particular problem, even if he is supposed to be aware of the general properties of mechanical joints using wedge-shaped inserts between two parts to be connected.
6. Claim 1, therefore, involving an inventive step is considered allowable.

7. The dependent claims cover further embodiments of the invention and they are not open to objection.
8. The amendments to the description submitted on 05.11.83 duly take account of the prior art and of the new wording of claim 1, in conformity with Rule 27(c) and (d) EPC, respectively, in conjunction with Rule 36(1) EPC. They are, therefore, not open to objection.
9. As far as applicant's request for reimbursement of the appeal is concerned, the Board observes the following. The ground on which the Examining Division refused the application was that it found lack of inventive step in the then valid claims, as stated in paragraph 1 on page 3 and paragraphs 11-13 on pages 7/8 of the decision.

The opinion of the Examining Division on the scope of the expression "large currents" was added only as an observation in paragraph 14 on page 8 and was clearly not presented as an objection which was a basis for the decision. The decision as such therefore was properly based on grounds on which the applicant had an opportunity to comment. Thus there was no contravention of Article 113(1) EPC and no substantial procedural violation justifying reimbursement of the appeal fee. The fact that the Board being of a different opinion with regard to inventive step formulated an objection against the expression in question during the procedure before it does not change this state of affairs.

Order

It is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the first instance with the order to grant the European patent applied for on the basis of the following documents:
 - a) Claim 1 as filed on 05.11.83, claims 2, 4-8 as originally filed and claim 3 as filed on 31.12.81, with the proviso that the word "areas" be changed to "walls",
 - b) Description with amendments filed on 31.12.81 and 05.11.83,
 - c) Drawings as originally filed.
3. The request for reimbursement of the appeal fee is refused.

[Handwritten signature]

J. Koe

G. Korsakov