

## **PATENTS ACT 1977**

IN THE MATTER OF

application GB 9511463.3

in the name of Robert Cameron

### **STATEMENT OF REASONS**

1 These are my reasons for the decision of 17 December 1998 refusing this application.

#### **History of the application**

2 The application was filed on 6 June 1995, claiming priority of 17 June 1994 from an earlier application. Claims were included in the application, although they were directed to advantages of the invention rather than to its definition. The search examiner was nevertheless able to make a search and issued a search report on 8 August 1995: this cited two documents each as category X - indicating lack of novelty or inventive step. He also reported that two inventions were claimed. On 28 September 1995 Mr Cameron filed a letter questioning the relevance of the citations but enclosing a complete new specification with substantial revisions in response to the citations and the plurality of invention. The claims from this specification were published together with the original specification in the published application GB 2290776 A dated 10 January 1996.

3 A request for substantive examination was received on 20 June 1996 and the first examination report was issued on 16 June 1997. The report listed several instances of subject matter in the amended application which was not present in the original application; numerous instances where clarification was required; and cited the specification GB 455174 (Weir) as showing lack of novelty or inventive step. This was the start of voluminous correspondence, which it is fortunately not necessary for me to detail, but which comprises seven further examination reports and fifteen letters from Mr Cameron, as at the end of October 1998. Significant events were as follows. A complete new specification was filed on 8 October 1997, which I understand was prepared in America and filed there also, as a continuation-in-part of a corresponding US application. This specification acknowledges six prior specifications (including

Weir). This elicited in the examiner's third report a major objection to the addition of subject matter, and some objections to clarity, but no objection under novelty or obviousness. In reply Mr Cameron contested the added subject matter objection, and also drew to the examiner's attention an old US specification, US 941,525 (Landenberger) which had been raised by the US examiner. The examiner clearly felt that Landenberger was a significant disclosure as he then mounted in his fourth report an obviousness objection, based on Landenberger in conjunction with Weir and with GB 553816 (Chapman) (which was acknowledged in the new specification). He also reiterated at some length the added subject matter and clarity objections. Further exchanges resulted in the filing on 23 June 1998 of eight amended pages to update the specification filed on 8 October 1997. These amendments seem to have resulted from the prosecution of the US application. The examiner in his seventh report (28 July 1998) did not find the amendments entirely clear but found that they were not sufficient to avoid the obviousness objection based on Landenberger as starting point; and the major added subject matter objection was still outstanding. No progress was made to resolving these objections in subsequent exchanges and a hearing was thus held before me on 15 December 1998 at which Mr Cameron appeared in person, and the substantive examiner, Mr M Richardson, attended for the Office.

### **Mr Cameron's invention**

4 The invention can readily be appreciated from Figures 1A and 1C of the specification of 8 October 1997 shown here in Annex A. In general terms it involves producing a rectangular envelope (corners 24-27) from a rectangular oblong sheet (11-14) by folding it along four fold lines (dashed lines) that are each diagonally disposed to intersect two adjacent sheet edges. This is done by folding over in turn the triangular flaps 1-4: in the embodiment shown this is done in the order 3, 4, 2, 1. It can be seen that adjacent triangular flaps overlap in small triangular portions; for example, flaps 2 and 4 overlap at triangle 18-23-27. Mr Cameron calls these small triangles "tip portions" and they are essential to the current definition of his invention. One can set up the arrangement by disposing the inner rectangle or "fold rectangle" 24-27 of length  $L$  and height  $h$  with its centre coincident with the sheet centre but tilted at an angle  $A$  so that its corners lie inside the sheet edges. Corners 25 and 27 are spaced inwardly by an amount  $dL$  which is the length extension at 18-27 and 17-25 to form what I will call the  $dL$  tip portions, and corners 24 and 26 are spaced inwardly by an amount  $dh$  which is the height extension at 22-24 and 21-26 to

form what I will call the *dh* tip portions.

5 The folded flaps must overlap to allow them to be secured by gumming. In Figure 1C the overlap between flaps 2 and 4 occupies the area 11-13-23-27-18; and when flap 1 is folded over it will overlap the edge 21-22. The tip portions produce envelope corners having four thicknesses, as at 18-23-27 (and in some prior art this bulk is avoided by cutting out paper at the tip portions, as will be seen) but the spacing of the envelope corners inwardly of the sheet edges is essential if the flaps are to overlap as described.

6 Mr Cameron imposes the following conditions:

6.1 The centres of the two rectangles coincide, as mentioned.

6.2 Edges of flaps 2 and 4 coincide at their overlap, as do edges of flaps 1 and 3 - in Figure 1C it can be seen that the edges of flaps 2 and 4 coincide between 13 and 11.

6.3 The final overlap produced by folding over the last flap, flap 1, is of uniform width - in Figure 1C the edge 12-22 of flap 1 thus folds over to run parallel to envelope mouth 21-22, as well as partially coinciding with edge 14-19 of flap 3.

6.4 The triangular flaps must not be so large that when folded in they overlap the opposite fold - in Fig 1A for example the corner 12 of flap 1 must not when folded about 16-17 fall beyond fold 18-19.

6.5 The *dL* tip portions must be of equal size, and the *dh* tip portions must be of equal size not more than the *dL* tip portions; in other words *dL* \$ *dh*.

7 This is all expressed in the claims as amended at 23 June 1998. Here there are three independent claims, one to a method of folding a rectangular sheet into an enclosure, one to an enclosure formed from a folded rectangular sheet, and one to a rectangular sheet foldable into an enclosure. These three claims all have the same features so I will quote the method claim 1:

In a method of folding into an enclosure a rectangular sheet having opposite first and second sheet edges and opposite third and fourth sheet edges with a sheet centre point equidistant between the opposite edges, the first and second sheet edges being longer than the third and fourth sheet edges, and wherein parallel first and second fold lines extend between the first and third sheet edges and the second and fourth sheet edges respectively and parallel third and fourth fold lines extend at right angles to the first and second fold lines between the second and third sheet edges and the first and fourth sheet edges respectively, defining a fold rectangle within the edges of the sheet having a centre point coincident with the sheet center point and also defining first through fourth right triangular flaps beyond the respective first through fourth fold lines with each flap having an apex point at its right angle, with first and second pairs of opposed right triangular tip portions on said flaps each with its right angle coincident with a corner of the fold rectangle, the triangular flaps being folded toward the same face of the fold rectangle in any sequence but with the first flap folded last to complete closure and with no apex point of any of the flaps extending beyond the fold line of the opposite flap, the improvement which comprises

- a) a section of sheet edge on the first flap being aligned and partially coincident with a section of sheet edge on the third flap,
- b) a section of sheet edge on the second flap being aligned and partially coincident with a section of sheet edge on the fourth flap,
- c) the flaps overlapping upon complete closure with an overlap portion of the first flap along a section of the first sheet edge on the other flaps of uniform width throughout its length, and
- d) the first pair of right triangular tip portions being of equal size and being at respective opposite ends of a diagonal of the fold rectangle parallel to the longer sides of the sheet and the second pair of right triangular tip portions being of an equal size not more than the size of the first pair.

8 Before evaluating the invention so claimed it needs to be asked whether any of the features should be discounted because they were not in the application as filed. The examiner had raised two points: firstly that the condition I identified at 6.4 above (reflected at the end of the first paragraph of the claim quoted above) was not explicit in the application as filed; and secondly that the condition I identified at 6.5 above that  $dL \neq dh$  was not explicit in the application as originally

filed. The first of these points (only) he was prepared to waive as far as the independent claims were concerned, on the basis that one might glean from the original application that it would be disadvantageous to exceed this condition and then perhaps to have to cut off the overlapping tip (as was done in Figure 13 of the original application). My own view is that neither condition was explicitly stated, and I do not think either was clearly implicitly necessary - indeed the first condition was exceeded in original Figure 13. For the time being I will leave a question mark over these two features of the claims.

9 It is helpful to understanding Mr Cameron's invention to know what problems the invention is intended to solve. Most broadly Mr Cameron's intention has been to provide a mathematical analysis of this folding geometry: in the description (now and originally) equations are given for angle  $A$  and for the sheet length and height. These can be used in various ways:

9.1 Given a required envelope size, to work outwards to fix the sheet size, knowing the angle  $A$  and the extensions  $dL$  and  $dh$ . Mr Cameron emphasises the importance of the tip portions and the conditions attached to them in achieving this objective.

9.2 To determine the minimum sheet size, assuming a working minimum overlap. In this context the parameters  $dL$  and  $dh$  have a significance, since it can be shown by simple mathematics that flaps 1 and 3 will overlap flap 2 by  $2dh$  measured parallel to the envelope short edge, and flaps 3 and 4 will overlap flap 2 by  $2dL$  measured parallel to the envelope long edge.

9.3 To determine the maximum sheet size, based on the condition 6.4 above. This has however been questioned as added subject matter.

### **The novelty/obviousness point**

10 The primary citation was US 941,525 (Landenberger) which was patented in 1909. In Annex B is shown the single sheet of drawings from this specification. The embodiment of this invention is generally described as:

an oblong envelop made from an oblong blank having notches cut in the longer edges thereof at unequal distances from the corners and notches cut in the shorter edges intermediate of the corners, such notches serving to define the lines upon which the flaps are folded to form the envelop, whereby the points of the side flaps will lie in different planes parallel to the top and bottom edges of the envelop, while the points of the top and bottom flaps will lie in different planes parallel to the side edges of the envelop.

11 This effectively defines a fold rectangle diagonally disposed within the edges of the sheet. It can be seen that Landenberger's first step is to cut notches  $a^1$  to  $a^4$  in the sheet edges; he does not however say what size or shape the notches are, nor how their positions are to be determined, and one is thus left to glean a certain amount of information from the drawings. Just how much the notional addressee of a patent specification may justifiably glean from drawings was something that was at issue in this case, and I will return to the drawings later. There was some argument that the cutting of notches in a rectangular sheet meant that the sheet was no longer rectangular, but I do not think the notches, or rather their absence in the present claims, is a significant difference for two reasons: (a) Landenberger requires in his claim a rectangular sheet of paper having a notch in each of its edges, and the provision of relatively small notches does not affect the property of rectangularity; (b) the present application as amended says at page 12 line 23 that the use of cut-outs along the edges of any sheet would not be a departure from the scope of the present invention.

12 The claim in Landenberger does however provide assistance in determining the geometry:

A rectangular envelop comprising a continuous side and a side consisting of four triangular flaps the apex of each of which is a right angle, the opposite flaps of each pair being symmetrical and the triangles of one pair being larger than those of the other pair, said envelop being formed from a rectangular sheet of paper having a notch in each of its edges, the bases of said notches lying at the corners of an inscribed rectangle of the size of the completed envelop, one of the diagonals of said rectangle being parallel to and midway between two of the edges of said rectangular sheet. (emphasis added)

13 The second statement I have underlined means by itself that in Figure 1 the longer diagonal of the inscribed rectangle bisects the rectangular sheet and it follows that notches  $a^2$  and

$a^3$  are of the same size. It can also be shown by simple mathematics that this is a necessary condition for pairs of folded edges to line up as shown in Figures 2 and 3 of Landenberger, which provides confirmation that this feature of the drawings is not fortuitous. It is this statement that makes this specification into an "enabling disclosure", ie giving the information necessary to make what is shown in the drawings. The first statement I have underlined, that opposite flaps are symmetrical, means I believe that triangular flaps  $B^1$  and  $B^3$  are congruent and that triangular flaps  $B^2$  and  $B^4$  are congruent. Mr Cameron disputed this interpretation because it conflicted with Figure 1. In interpreting patent drawings Mr Cameron was prepared to take a ruler and protractor in order to demonstrate that, for example, sheets were not rectangular or that symmetry was lacking. In Landenberger he pointed out that notches  $a^1$  and  $a^4$  as shown in Figure 1 are not of the same size, and he suggested that the word "symmetrical" in the claim could therefore be a misprint for "asymmetrical". He also made a general point, based on the second law of thermodynamics, that symmetry is not to be assumed or expected. I think Mr Cameron is placing an unjustifiable reliance on the dimensions in the drawings. I am ready to acknowledge that with patent specifications which are short on detail (as many older ones are) one must sometimes go to the drawings for assistance in carrying out the invention; for example Landenberger does not say how the notch cuts are determined, whereas from the drawings it would be understood that they are made along the fold lines; and the aligned flap edges shown in Figures 2 and 3 are clear enough, even if not explicitly mentioned. But it is conventional that patent drawings are not engineering drawings and one must therefore interpret relative dimensions with some caution, and certainly not conversely to clear statements in the text.

14 I therefore believe that Landenberger shows the fold rectangle disposed on the sheet with all possible symmetry, by which I mean that the centres of the rectangles coincide; the longer diagonal of the fold rectangle bisects the shorter sides of the sheet; and notches  $a^2$  and  $a^3$  are of the same size (the size termed  $dh$  in the present application), as are notches  $a^1$  and  $a^4$  (size  $dL$ ). Further, his envelope has aligned edges (see for example the overlap of  $B^3$  and  $B^4$ ) with a uniform-width overlap of the final flap to be folded: both these follow from the condition that the fold rectangle diagonal bisects the sheet, as well as being clear in the drawings. His sheet is also clearly not so large that the outer corner of a flap would fall beyond the opposite fold when folded

in. In summary, comparison of the Landenberger disclosure with the conditions I listed at 6.1 to 6.5 above for the present invention, or with the terms of the claim quoted in paragraph 7, will show that Landenberger discloses everything except the condition which I have expressed as  $dL$   $\$ dh$ . I did however place a question mark over this condition on the ground of added subject matter and below I conclude that this and other matter has indeed been added.

15 I therefore conclude that, discounting added matter, all claims now on file except claims 2, 6, 9, 13, 16, and 20 are disclosed in Landenberger and thus open to objection under section 1(1)(a) of the Act for lack of novelty. For completeness I note here that claims 2, 9 and 16 relate to the special case of a square envelope and are thus *prima facie* obvious; claims 6, 13 and 20 raise points of added subject matter and clarity related to specifying the maximum sheet size (see paragraph 17.1 below); and claims 7, 14 and 21 have been interpreted as stating that the final overlap is equal to  $2dh$  - a condition which applies (in this invention and in Landenberger) irrespective of sheet size, as indicated at paragraph 9.2 above, not for the minimum sheet size only, as stated.

16 I make two comments about this finding. Firstly, it may seem improbable that a claim as detailed as that quoted in paragraph 7 could be disclosed by a disclosure as brief as Landenberger, but I am clear that Landenberger includes the essentials to specify the invention and provide an enabling disclosure for it, while the present claims include a great deal of definition (some of it redundant) which does not add up to anything distinctive. Secondly, I believe the examiner thought Landenberger showed lack of inventive step rather than lack of novelty, and I believe this was because Landenberger uses notches. To my mind the Landenberger envelope satisfies all the terms of the amended independent claims here, as I mentioned in paragraph 11, and the addition of notches does not affect that conclusion,.

### **The added subject matter point**

17 The usual process of amending the claims of a patent application in the face of prior art is to incorporate into them features from appendant claims or from the description. The applicant has to appreciate that he is committed to the technical disclosure he made at the filing date of the application and he is not at liberty to add information from subsequent development or re-working



of his invention. Even if the thrust of this re-working is in the direction of a more precise definition of the invention, and produces a claim which is narrower in scope than any before, there is a considerable risk that by focussing on features which had not been given any prominence the reader will gain a quite different impression as to what is significant about the invention: in other words they will be presented with what is really a different invention.

18 Mr Cameron filed on 8 October 1997 a complete new specification, and on 23 June 1998 further amendments to that specification. This represented a significant re-working of the invention, with new embodiments, and the examiner quite properly identified numerous instances of material that was not foreshadowed in the original application. Mr Cameron has disputed the objection but made no attempts to meet it by amendment, from which I conclude that he either does not appreciate the policy and practice of the Office on this point, or believes it to be generally unsustainable. I have looked at the points raised by the examiner in correspondence, most recently summarised in a minute dated 14 December 1998 handed to Mr Cameron at the hearing, and I believe the objections are correctly based and in accord with existing precedent and practice. The new subject matter was principally in the following areas:

18.1 Apex points extending beyond opposite flaps; maximum sheet size I drew attention above to the condition in claim 1 that the apex point of one flap should not when folded in extend beyond the fold line of the opposite flap (condition 6.4). There was nothing in the original application to identify this as either (i) a significant limitation for the invention, or (ii) the condition for the maximum sheet size, as now claimed in claims 6, 13 and 20: indeed there was an embodiment (Figure 13) which exceeded this requirement. The original disclosure did not include any discussion of maximum sheet size.

18.2 Minimum sheet size The stated conditions for minimum sheet size have changed. In this connection I note again that claims 7, 14, 21 do not seem to define a condition for minimum sheet size (see paragraph 15 above).

18.3 The  $dL$  \$  $dh$  condition I drew attention above to this condition in sub-

paragraph (d) of claim 1. It was not identified in the original application as a necessary condition for the invention. The two numerical examples given on page 13 there simply took  $dL = dh$

18.4 New embodiments There was no embodiment in the original application corresponding to the current embodiment of Figure 5 having a square envelope, nor any embodiment precisely corresponding to current Figure 7.

19 I therefore uphold these and other objections raised by the examiner on added subject matter. The amendments therefore cannot be allowed under the terms of section 76 of the Act.

### **Conclusions**

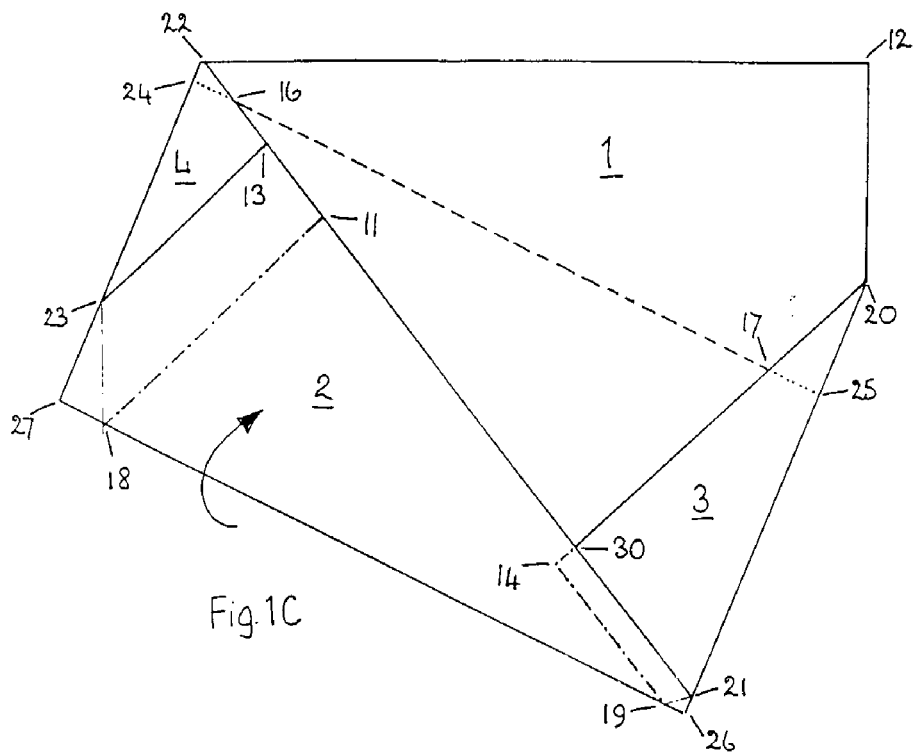
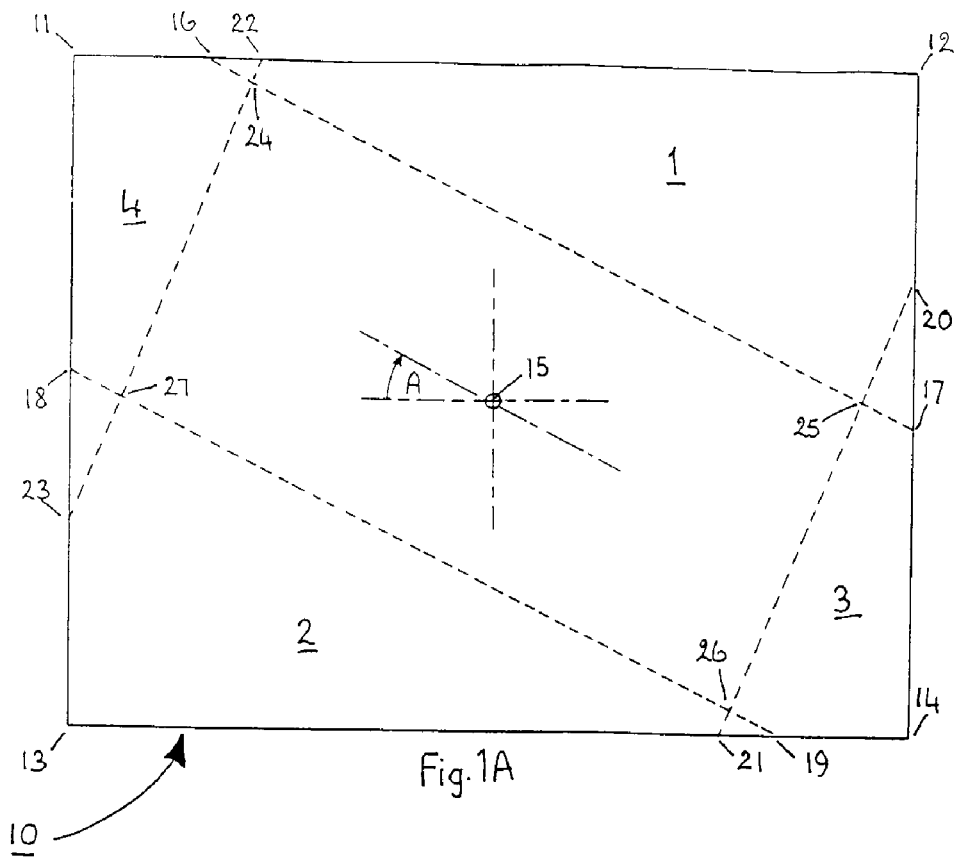
20 The amendments embodied in the specification filed on 8 October 1997, as further amended on 23 June 1998, are not allowable on two counts: the invention so defined is not new over Landenberger, and matter has been added that was not originally disclosed. Mr Cameron has not prosecuted any other form of the application, and the application itself must therefore be refused on the terms stated in my decision of 18 December 1998.

Dated this 24th day of December 1998

H J EDWARDS

Deputy Director (Patents), acting for the Comptroller

**THE PATENT OFFICE**



R. LANDENBERGER.  
ENVELOP.  
APPLICATION FILED MAY 16, 1907.

941,525.

Patented Nov. 30, 1909.

