



## PATENTS ACT 1977

APPLICANT                      Norcros Group (Holdings) Limited

ISSUE                          Whether patent application GB1517570.6 complies  
with section 1(1)(b) of the Patents Act

HEARING OFFICER                      P Mason

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### DECISION

#### Introduction

- 1 Patent application GB1517570.6 (“the Application”) entitled ‘Improvements in building coverings’ was filed on 5 October 2015, claiming a priority date of 3 October 2014 from an earlier GB application. The Application was published on 4 May 2016 as GB2531923.
- 2 The first examination report dated 22 February 2016 raised objections that the claims were either not novel or lacked an inventive step. The examiner raised a further objection that the independent claims were unclear as they attempted to define the invention in terms of a result to be achieved. After amendment of the claims the examiner was satisfied that the claims were now novel. He was also satisfied that the clarity objection regarding the now single independent claim was resolved.
- 3 However, despite further rounds of amendment the applicant was unable to satisfy the examiner that the claims involve an inventive step. An agreement could not be reached and so the matter came before me at a hearing on 16 January 2019. The applicant was represented by Ms. Emily Weal and Mr. Nathaniel Taylor (as an observer) of Keltie LLP.
- 4 I am grateful for the applicant’s skeleton arguments filed on 9 January 2019.

#### The invention

- 5 The Application relates to a wall surface covering system and in particular a system for fixing ceramic tiles to walls. Traditionally ceramic tiles are fixed to a wall via a cement-based adhesive forming a permanent bond making it difficult to remove tiles and often leading to damage of the underlying surfaces. The invention provides a non-permanent bond by the use of hook-and-loop technology. Hook-and-loop fasteners comprising co-operating hook-and-loop components are well-known in

many fields for fixing items together and there are several well-known brands of such fasteners for example Velcro (RTM).

- 6 The applicants identified a problem with existing hook-and-loop fasteners in that they did not create a bond which was both strong enough to hold a tile securely to a wall whilst allowing the tile to be easily removed without being broken. The rigidity of the tiles makes a peeling motion difficult and the fact such tiles are hung vertically on the wall means the tile's weight tends to pull the tile off the wall. The applicants identified the forces that need to be addressed namely: Pull Strength to determine the bond required to ensure the tile remains securely fixed to the wall; Shear Strength to determine the bond required to ensure the tile does not move once it has been fixed to the wall; and Peel Strength to determine the bond required to allow easy tile removal with minimal force.
- 7 The applicants considered the requirements of high Pull Strength, high Shear Strength and low Peel Strength to design a hook-and-loop system for their specific requirements. A first component 20 (see Figure 5 reproduced below) of a hook-and-loop fastener is a loop component which is glued onto the back of a tile and comprises a multiplicity of dense, lightweight, knitted loops carried by a base layer 21. A corresponding second component 10 (see Figure 3 reproduced below) is glued onto a wall and is typically an array of tightly-packed, low-profile, microscopic, mushroom-shaped hook structures formed on a base layer 12. Ms Weal brought a sample of the invention to the hearing comprising an array of tiles secured to a board by the hook-and-loop system of the invention. The tiles were firmly secured but could easily be removed with a chisel-type tool and then subsequently replaced.

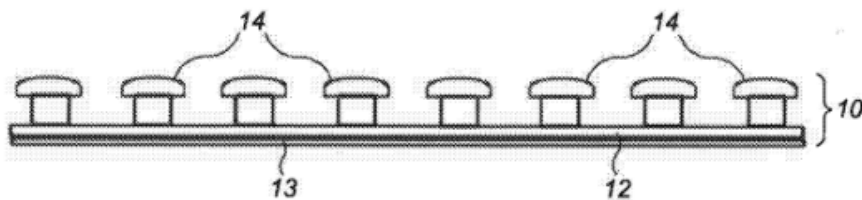


FIG. 3

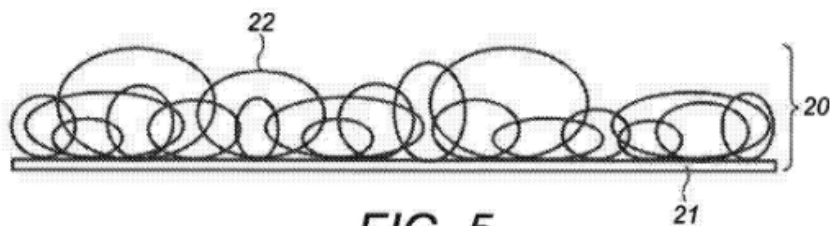


FIG. 5

- 8 The Application currently has 24 claims filed on 25 June 2018 including one independent claim, claim 1, directed to a wall surface covering system as follows:
1. *A wall surface covering system comprising:  
a wall surface covering for covering an underlying vertical support surface constituted by a wall, said wall surface covering comprising a rigid body:*

*a first component of a hook-and-loop fastener fixable to the rigid body of the wall surface covering; and*

*a second component of the hook-and-loop fastener that is fixable to the underlying vertical surface;*

*wherein the first and second components are cooperable such that, when the first component is fixed to the surface covering and the second component is fixed to the underlying vertical surface, the first and second components can be engaged to cause the wall surface covering to grip the wall; and*

*wherein the hooks of a hook component of the hook-and-loop fastener are of polypropylene and of mushroom shape comprising a stem and a cap, the cap extending beyond the stem in at least two mutually transverse directions to engage the loop fastening bi-directionally, and the hook component has a thickness of between 0.3 mm and 0.75 mm; and*

*wherein the loops of a loop component of the hook-and-loop fastener are of a knitted material in which the loop weight has a range of from 80 to 120 grams per square meter, and the loop component has a thickness of between 0.3 and 0.75 mm;*

*such that the first and second components are configured to cooperate to provide a fastening having a Pull Strength in the range of 0.5N/cm<sup>2</sup> to 2.5N/cm<sup>2</sup>, a Shear Strength in the range of 20N/cm<sup>2</sup> to 40N/cm<sup>2</sup> and a Peel Strength in the range 0.2N/cm to 1.0 N/cm, to provide a shear strength of the fastener that is greater than the shear force applied by the weight of the tile to hold the surface covering in position on the vertical support surface, and to provide a peel strength that is less than the stress required to fracture the rigid body to allow removal of the surface covering from the underlying surface by peeling the rigid body away from the wall.*

- 9 The only issue for me to decide is whether the invention as defined in claim 1 involves an inventive step in light of prior art cited by the examiner.

### **Inventive Step – the law**

- 10 Section 1(1) of the Act sets out what is required of a patentable invention as follows:

*1(1) A patent may be granted only for an invention in respect of which the following conditions are satisfied, that is to say*

*...*

*(b) it involves an inventive step;*

- 11 The provisions in relation to inventive step are found in section 3 which states:

*3. An invention shall be taken to involve an inventive step if it is not obvious to a person skilled in the art, having regard to any matter which forms part of the state of the art by virtue only of section 2(2) above (and disregarding section 2(3) above).*

- 12 The Court of Appeal in *Windsurfing*<sup>1</sup> formulated a four-step approach for assessing whether an invention is obvious to a person skilled in the art. This approach was

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<sup>1</sup> *Windsurfing International Inc. v Tabur Marine (Great Britain) Ltd*, [1985] RPC 59

restated and elaborated upon by the Court of Appeal in *Pozzoli*.<sup>2</sup> Here, Jacob LJ reformulated the *Windsurfing* approach as follows:

- (1)(a) *Identify the notional “person skilled in the art”*
- (1)(b) *Identify the relevant common general knowledge of that person;*
- (2) *Identify the inventive concept of the claim in question or if that cannot readily be done, construe it;*
- (3) *Identify what, if any, differences exist between the matter cited as forming part of the “state of the art” and the inventive concept of the claim or the claim as construed;*
- (4) *Viewed without any knowledge of the alleged invention as claimed, do those differences constitute steps that would have been obvious to the person skilled in the art or do they require any degree of invention?*

### **Inventive Step - analysis**

- 13 I will consider the *Windsurfing/Pozzoli* steps in turn.

#### Step 1: Identify the person skilled in the art and their common general knowledge

- 14 Regarding step 1(a), it was agreed by the examiner and the applicant that the person skilled in the art is a designer and manufacturer of interior surface covering systems in buildings, particularly tiles and tiling systems. I think this is a reasonable assumption.
- 15 With respect to step (1b), there has been some dispute between the examiner and the applicant regarding the relevant common general knowledge of the skilled person. Both are agreed that the person skilled in the art would have knowledge of the existence of hook-and-loop fasteners. They also agree that the skilled person would be aware that it is possible to attach items to walls using this technology. I think it is also reasonable to assume that the skilled person would know that a large number of different types of such fasteners are available. They would also be aware of the basic principles of how these systems work for example perhaps realising that the more hooks you have the more difficult it is to pull the system apart but this understanding would be rudimentary. However, I agree with the applicant that the skilled person would not have a detailed knowledge of the specific parameter ranges and resulting properties of these fasteners, and how the various parameters interact with each other. The examiner has highlighted that there is a whole patent classification area for hook-and-loop fastening of covering materials to building substrates as well as classification areas relating to hook-and-loop fasteners in general. However, I agree with Ms. Weal that this does not mean that the contents of all of these documents are within the common general knowledge of the skilled person. Similarly, I agree with Ms. Weal that particular shapes of hooks such as mushroom-shaped would not be readily known to the skilled person. It appears that nylon is the most common material for hook-and-loop fasteners; Ms. Weal confirmed this at the hearing. Although more limited to speciality items, I think it is reasonable to assume that the skilled person would also be familiar with the use of polypropylene as an alternative material.

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<sup>2</sup> *Pozzoli SPA v BDMO SA* [2007] EWCA Civ 588

## Step 2: Identify the inventive concept of the claim

- 16 Regarding the inventive concept of claim 1, the applicant and examiner are in general agreement that the inventive concept is a covering system having a rigid covering element attachable to a substrate using a hook-and-loop fastener, the hook-and-loop fastener having the specific technical features set out in claim 1. For convenience these four features are:
- 1) *the hook shape and material (a polypropylene hook of mushroom shape);*
  - 2) *the loop weight density (loop weight range from 80 -120 g/m<sup>2</sup>);*
  - 3) *the hook component thickness (between 0.3 mm and 0.75 mm); and*
  - 4) *the loop component thickness (between 0.3 mm and 0.75 mm).*
- 17 I agree with the applicant that the inventive concept is specifically for a wall surface covering rather than a surface covering in general. As Ms Weal points out in her skeleton arguments, technical considerations are different for a wall surface covering than for, say, a floor surface covering because gravity will tend to cause the rigid body to fall from a wall which will exert an additional force on the fastener and also cause the body to move laterally downwardly along the wall surface.
- 18 It has been agreed that an objection regarding the claims attempting to define the invention in terms of a result to be achieved has been overcome by addition of the specific technical features 1-4 of the hook-and-loop system listed above. It is understood that it is this combination of features which leads to the specific values of Pull Strength, Shear Strength and Peel Strength defined in the latter part of claim 1. Therefore, I only need to consider whether it would have been obvious for the skilled person to arrive at the four technical features and there is no need for me to consider the resulting strength parameters. This approach was accepted by Ms. Weal at the hearing.
- 19 From the description of the Application, the thickness of the hook and loop components 10, 20 include both a base layer 12, 21 and the hooks and loops themselves 14, 22 (see earlier reproduced Figures 3 and 5). Ms. Weal confirmed this at the hearing.
- 20 There is some confusion regarding the term 'mushroom shape' in claim 1 in relation to the hooks. Ms. Weal explained at the hearing that this term is intended to be narrower than that subsequently defined in claim 1 and refers to a hook with a stem and cap, the cap extending beyond the stem in all directions (rather than in at least two mutually transverse directions as defined in the claim) as illustrated in Figures 3 and 4 of the Application and discussed on page 25. This would include caps with non-circular cross-sections. I will adopt this narrower definition in this decision.

## Step 3: Identify the differences between the state of the art and the inventive concept of the claim

- 21 Moving onto step 3, no prior art was found by the examiner that discloses all the features of claim 1. In his most recent report of 9 October 2018, the examiner cites ten patent documents that disclose hook-and-loop fastening systems for attaching rigid or flexible material to walls or floors. He also cites a further five patent documents disclosing the use of hook-and-loop fasteners primarily in other fields for

example for securing disposable garments such as nappies and surgical gowns. He explains that these 15 documents are examples of many other documents. A full search, however, has been carried out and the cited documents are considered to be the best selected examples. I will quickly review these cited documents in relation to the inventive concept of claim 1 and in particular to the four defined technical features 1-4 listed above.

- 22 DE 4012613 A1 (henceforth "D1") discloses a hook-and-loop system for attaching ceramic tiles to a wall or floor. In my view this is the closest prior art of the documents cited. One component of a hook-and-loop system, preferably the hook component, is glued to the back of the tile while the other component, preferably the loop component, is bonded to the wall (or floor) surface. The hooks are described as mushroom shaped but not confirmed as polypropylene. There are no details provided regarding the loop weight density. The thickness of the hook component is not provided. We are told that the loop component has a thickness of less than 1 mm but the specific thickness required in claim 1 is not disclosed. Therefore this document partially meets feature 1 but does not meet remaining technical features 2-4 above.
- 23 The examiner chooses document WO 98/03104 A1 (henceforth "D2") as the closest prior art. D2 discloses an anchor sheet with an array of hooks for installation under carpets or other decorative coverings including rigid coverings such as tiles. Corresponding loops are placed on the back of the covering. All of the embodiments are concerned with floor coverings. There is only brief mention of using the anchor sheet to attach a covering to a wall. The hooks are not confirmed as mushroom shaped. The anchor sheet may be made of polypropylene but the hooks are only described as 'plastic'. The thickness of the anchor sheet is given as 10/1000 – 20/1000 i.e. 0.01-0.02 inches which is equivalent to 0.25 mm to 0.51 mm. We are told that the hoops are attached to the sheet (page 9 line 31-33) and so this thickness appears to be for the anchor sheet alone without the hooks. There are no details provided for either the loop component thickness or loop weight density. Therefore this document does not meet any of features 1-4 listed above.
- 24 GB2188080 A (henceforth "D3") discloses a hook-and-loop system for attaching ceramic tiles to walls or ceilings. The hooks are made from nylon rather than polypropylene and there are no details provided on the hook shape. The document explains on page 2 lines 76-84 that tiles are securely installed by the fastener but are readily pulled away from the surface. However, there are no further details provided on the required hook and loop parameters. Therefore this document does not meet any of features 1-4.
- 25 US 2001/0002526 A1 (henceforth "D4") discloses a number of removable ceramic tiles held on a wall surface with Velcro (RTM) fasteners. No features relevant to those listed 1-4 above are provided.
- 26 WO 01/81771 A2 (henceforth "D5") discloses a membrane with a dispersion of fastener elements such as hooks. The membrane is placed on a floor or wall. Rigid tiles with corresponding loops may be secured to the membrane. The hooks may be mushroom shaped and may be made of polypropylene. The loop weight density is not disclosed. The base layer of the membrane may have a thickness of less than about 0.38 mm but this is without the hooks. The forces encountered when

supporting tiles on vertical walls are discussed briefly (page 25-26) and how this affects the size of the hooks and loops. However, none of the main embodiments relates to securing rigid bodies to walls. No dimensions or specific parameters are disclosed relevant to features 2-4 above. Therefore this document meets feature 1 only.

- 27 The remaining five documents of the first ten cited by the examiner are predominantly concerned with attaching coverings to floors rather than walls. One (US2010/0285268 A1) discloses the hook component thickness (feature 3) and the required loop component thickness (feature 4) but is entirely concerned with floor coverings. None discloses the required loop weight density (feature 2).
- 28 The further five documents are mainly concerned with securing disposable items such as nappies and surgical gowns although one briefly mentions securing carpet tiles to a floor. None discloses securing coverings to walls. Two of these documents disclose the required loop weight density (feature 2).

Step 4: Do these differences constitute steps that would be obvious to the skilled person or do they require any degree of invention?

- 29 Regarding step 4, I need to decide whether in light of the prior art before me, the skilled person would arrive at the invention defined in claim 1 without exercising any inventive ingenuity.
- 30 As stated above, in my view D1 is the closest prior art. D1 discloses a hook-and-loop system for attaching ceramic tiles to walls. The system includes mushroom-shaped hooks but the hook material and hook component thickness are not disclosed. The corresponding loop component has a thickness of less than 1 mm but the required range of 0.3 mm to 0.75 mm is not disclosed. The loop weight density is unknown.
- 31 I'll consider these missing features in turn. It appears that the most common material for fabricating hook-and-loop components is nylon. However, the more specialized material polypropylene would still be known to the skilled person as part of their common general knowledge. It seems likely that the skilled person would adopt polypropylene to fabricate the hooks in the hook-and-loop system of D1.
- 32 With knowledge from D1 of a loop component thickness of less than 1 mm, I think it reasonable to assume that the skilled person would consider a thickness in the required range of 0.3 to 0.75 mm. This is particularly likely because the required range significantly overlaps the range suggested in the document.
- 33 No guidance has been provided in D1 regarding the hook component thickness or loop weight density. These are only provided in documents before me that are concerned with floor coverings where the important factor of gravity is not an issue, or in documents concerned with very different applications such as securing nappies or surgical gowns. The skilled person would not look to these documents for help in securing tiles to walls. Moreover these specific requirements would not be part of the skilled person's common general knowledge.
- 34 The Applicant explains in their skeleton arguments and Ms. Weal elaborated at the hearing, that the technical features defined in claim 1 act in synergy to produce a

technical effect or advantage. All four features 1-4 above, she explained, are required. She explained further that the various features 1-4 will have an impact on the desired strengths defined later in the claim. Altering one of the features, say reducing the loop density for example, would reduce the peel strength; however, this would also reduce the shear and pull strengths, such that the fastener may not be able to hold the weight of the rigid body.

- 35 I agree that it is not just a matter of choosing the various parameters in isolation. The features act in synergy and therefore cannot be chosen randomly. Choosing one parameter will have a knock-on effect on another. To provide the missing parameters would require experimentation to make sure the strength values are such to ensure the tile stays securely on the wall but can still be easily removed without fracturing the tile. These investigations would lie outside the remit of simple trial and error. The Applicant explains in their skeleton arguments that changing the parameters would involve manufacturing a new hook or loop component from scratch and adapting the manufacturing process. Even if the skilled person consulted an expert in the field of hook-and-loop fastening systems, the required combination of features would not be readily apparent; the resulting team would still need to experiment to find the required solution. Therefore I consider the invention as set out in claim 1 to include an inventive step in light of D1.
- 36 I find a similar result by starting with any of the documents D2-D5. I do not think the skilled person would be able to determine the required balance of parameters to meet the requirements of claim 1 in light of these documents.
- 37 The remaining cited documents lie even further from the claimed invention. None forms a reasonable starting point as they either deal primarily with fixing coverings to floors and so gravity is not an issue or are concerned with a different field of endeavour for example securing disposable garments such as nappies and surgical gowns. The skilled person would not be provided with sufficient guidance from these documents on how to secure tiles to walls and from there to determine the missing technical features.

### **Decision**

- 38 I have found the invention as currently claimed to involve an inventive step in light of the cited patent documents before me. I therefore remit the case to the examiner for further processing. In particular, claim 1 should be amended to correctly define the features of a mushroom-shaped hook.

### **P MASON**

Deputy Director, acting for the Comptroller