

PATENTS ACT 1977

IN THE MATTER OF an application
by Procter & Gamble Limited
for the revocation of British Patent
No 2129689 in the name of
Mölnlycke AB, and

BLO/IS/90

IN THE MATTER OF an application
by Procter & Gamble Limited
for the revocation of European Patent (UK)
No 0080647 in the name of
Boussac Saint Freres (BSF)

DECISION

Revocation of British Patent No 2129689 (which I shall call the Mölnlycke patent) is sought on the grounds of lack of novelty, lack of inventive step, insufficiency and added matter. Revocation of European Patent (UK) No 0080647 (which I shall call the BSF patent) is sought on the grounds of lack of novelty, lack of inventive step, and insufficiency.

At a hearing before me on 12th-15th and 18th-21st December 1989 Mr C Floyd and Mr R Arnold appeared as counsel for the two patentees and Mr G Burkill appeared as counsel for the applicants for revocation.

The Mölnlycke patent is dated 24 October 1983, claims a priority date of 25 October 1982 and was granted on 22 October 1986 for an invention entitled "Arrangement in a disposable diaper". The BSF patent is dated 16 November 1982, claims a priority date of 25 November 1981, and was granted on 16 October 1985 for an invention entitled "Disposable nappy-pants equipped with adhesive fastening devices."

Both patents are for inventions relating to disposable nappies or diapers which in use are held around the wearer by tabs connecting the back panel of an outer plastic layer to the front panel of the layer. One end of each tab is fixed to the back panel and the other end is coated with adhesive so that it may be stuck to the front panel. In both cases there is a reinforcing strip or strengthened area on the front panel to which the tabs can adhere; this avoids tearing the front panel when the tabs are peeled off for example to see whether the nappy is soiled. The Mölnlycke patent is further characterised by the reinforcing strip being inelastic and its surface being embossed, and the BSF patent is further characterised by the strengthened area being smooth, coupled with a functional requirement that this improves the tensile strength of the adhesive while promoting ungluing when pulled at an angle.

The two applications for revocation were filed in March 1987. The normal stages of evidence were completed by 19 September 1989 when I held a preliminary hearing in the two proceedings. By then Mölnlycke had acquired control over the BSF patent, and the two cases clearly had a number of features in common. I therefore directed that both applications for revocation should be heard during the fortnight commencing 11 December 1989, and that certain evidence in each case (subsequently extended by agreement) should be admitted in the other case.

I also invited counsel and their instructing patent agents to agree on the arrangements for hearing the two cases, and said that I was available to give directions if necessary. In fact agreement was reached, which I approved, that there would be a single hearing, that the written evidence in each case was as filed in the respective case, subject to identified written evidence being available in both cases, that oral evidence given at the hearing would be common to both cases, and that there

would be a single decision.

Affidavits and statutory declarations forming the normal stages of evidence were made, on behalf of the applicants for revocation by:-

Mr Cooper, a staff engineer with Procter & Gamble Co, with responsibility for the development of new materials for diapers.

Mr Hershberger, a group leader in Procter & Gamble GmbH's technical centre.

Dr Sagar, a Senior Research Officer in the Shirley Institute.

Mr Cooper, Mr Hershberger and Dr Sagar gave evidence in both cases, and Mr Cooper also gave oral evidence at the hearing.

I also admitted late-filed evidence on behalf of the applicants from:-

Mr Dulle, a former Procter & Gamble Company staff engineer, who did experimental work on reinforced nappy panels before the priority dates of the two patents, and from

Mr Swayze, to whom Mr Dulle reported.

Evidence was provided on behalf of BSF by:-

Professor Andrews, Professor of Materials at Queen Mary College, London.

Mr Chambers, formerly General Manager and Director of Peadouce (UK) Ltd, a subsidiary of BSF.

Mr Jonkheere, the inventor.

Mr Wilson, formerly Research Director of the Fasson Division of Avery International, suppliers of adhesive tabs for use in nappies.

Professor Andrews, Mr Chambers and Mr Wilson also gave oral evidence.

Evidence was also provided on behalf of Mölnlycke by:-

· Mr Hemberg, International Marketing Manager with the patentees.

Mr Olsson, the patentees' Swedish patent agent.

Ms Ternström, the patentees' Vice President of Research and Development.

Mr Widlund, the inventor.

Mr Hemberg, Mr Olsson and Mr Widlund also gave oral evidence.

Evidence of other proceedings and of prior art documents was provided by a number of patent agents and lawyers, whom I need not mention by name.

Finally, the evidence filed in one case that I admitted to the other case consists of:

paragraph 10 of Mr Hemberg's affidavit,

paragraphs 5, 6, 21, 23 and 24 of Mr Widlund's first affidavit,

Mr Widlund's second affidavit,

paragraphs 14, 15, 17, 18 and 20 of Mr Jonkheere's affidavit,

paragraph 12 of Mr Chambers' affidavit,

paragraphs 3-13, 20, 22-24, 26, 29, 32-39 and 50 of Mr Wilson's first affidavit,

paragraphs 6, 7, 10 and 12 of Mr Wilson's second affidavit,

paragraphs 18, 19, 21, 22, 23, 25, 26, and 42 of Professor Andrews' first affidavit, exhibits 4 and 5

to Professor Andrews' first affidavit, and

Professor Andrews' third affidavit.

The general lines of development of disposable nappy technology are not in dispute. The earliest commercial versions (in the 1960's) consisted of an impervious plastic outer sheet, a liquid-permeable inner sheet, and an absorbent pad between the sheets. They were held around

the baby by safety pins, like the fabric nappies they were intended to supplant. The first major development was the introduction of adhesive tapes. The tapes fixed to the back panel of the nappy (at the so-called "manufacturer's bond"), and their free ends were stuck onto the front panel (the so-called "mother's bond"). In practice, there was a need to unfasten and refasten the mother's bond to adjust the fit of the nappy and to check for soiling. However the panel material was thin and frequently was weaker than the adhesive bond, with the result that the nappy had to be discarded and a new one fitted. There was a conflict between the need for an adhesive bond so strong as to avoid what Mr Wilson called the "worst thing possible" namely "for a soiled nappy to pop open and fall off" (1st affidavit para 11), yet sufficiently weak to permit unfastening without tearing the plastic outer sheet.

Only two solutions to this problem have achieved substantial commercial success. The first was the "target tape" system, in which a tab was stuck to the free end of the tape. On first fitting, the tab (still sticking to the tape) was attached to the front panel to form the mother's bond. Unfastening was then achieved by peeling the tape away from the tab, the tab being left stuck onto the front panel of the nappy. The nappy could then be refastened by reattaching the tape to the tab, and the process could be repeated.

The second commercially successful solution was to attach a reinforcing strip to the mother's bond area of the front panel. This is the common feature of the two patents in suit, and is used in MÖlnlycke "Libero" nappies, in Procter & Gamble's "Ultra Pampers, and in Peaudouce "Baby-slip" nappies, all introduced between 1984 and 1987.

It is also beyond dispute that much research and development was directed towards this problem in the ten

years before the two patents in suit were published, and it is convenient at this point to review briefly in chronological order the more pertinent patent literature in the diaper art, which Mr Arnold took me through at the hearing. (I should note that the later ones were published later than the patentees' priority dates.)

The earliest of these documents is US Patent 3561446 (Jones) filed on 20 October 1969, which is principally concerned with a single use diaper with accordion pleated folds for improved containment of the baby's waste products; however an optional feature is a thin, flexible, non-extensible waistband, preferably of a laminate of thin plastic film with paper or gauze. This is therefore an example of the reinforcement type.

In US Patent 3848596 (Pennau) (July 1973) the pressure sensitive adhesive on the fastening tapes has a protective covering divided into separately removable sections which are stripped off in succession to uncover the fresh adhesive area thereunder for fastening or refastening, and in US Patent 3867940 (Mesek) (August 1973) tearing and stretching of the impermeable backsheet during wearing and unfastening of the diaper is prevented by bonding reinforcement material to the backing sheet over its entire surface or in the anchoring and securing locations of the tape tabs or safety pins. I shall have to give this document a closer examination later.

US Patent 3951149 (Ness 1) (March 1975) is directed to a target tape system and US Patent 3989048 (Cepuritis and Tritsch) (September 1975) proposes a second pressure sensitive adhesive coating on the inner face of each tape tab together with lines of weakening so that the tab may be severed to open the diaper and the second adhesive coating used to refasten the diaper.

Tearing of the backing sheet is minimised in US Patent

4055182 (Mack) (October 1975) by bonding the backing sheet to the absorbent pad with sufficient adhesive to reinforce and strengthen it. US Patent 4020842 (Richman) (October 1975) relates to laminated tab stock comprising three superposed substrates each coated with adhesive and having release surfaces, the second or intermediate substrate being divided by a slit so that when permanently bonded around the edge portion of the diaper by the third substrate adhesive, the peeled-back first and second substrates form a tab for joining to another portion of the diaper by means of the second substrate adhesive, and are subsequently peeled apart when the diaper is reopened exposing the first substrate adhesive for reclosing the diaper.

In US Patents 4067337 (Ness 2) (February 1976) and 4058125 (Ness 3) (June 1976) tearing of the thin outside film of the diaper is avoided by applying a non-adhesive open mesh sheet to the tab to reduce the adhesive contact area.

US Patent 4049001 (Tritsch 1) (February 1976) is directed to a target tape system, and in US Patent 4014339 (Tritsch 2) (March 1976) the adhesive tab comprises a ribbon folded to form a plurality of articulated segments coated with adhesive which may be unfolded for initial fastening of the diaper, and the tab then severed along transverse lines of weakening to open up the diaper and enable a further adhesive layer to be exposed for refastening. Tearing of the backing sheet is minimised in US Patent 4055183 (Ryan) (October 1976) by fixing each fastening tape thereto in a region where the filler material has been cut out and the backing and top sheets are bonded together.

British Patents 1593710 (Avery) (February 1977) and 2035053 (Kao Soap) (November 1978) are directed to a target tape system, and US Patents 4178933 (Avery) (March 1977) and 4227530 (Schatz) (August 1977) relate to

modified two substrate diaper tabs and divided release strip tabs respectively.

In US Patent 4210144 (Sarge) (September 1978) refastenability of the diaper is improved by coating the backsheet with a material having high tensile strength and low elongation relative to the backsheet. Similarly GB Patent 2054350 (Kimberly-Clark) (June 1979) relates to coating the interior of the backsheet in the areas where the tape tabs are to be adhered during use with a layer of hot melt adhesive. I shall have to return to Sarge and Kimberly-Clark later.

US Patent 4299223 (Cronkrite) (May 1980) is concerned with the problems of manufacturing and storing tabs and refers to the difficulties encountered in maintaining a permanent bond between the tab inner surface and the outer surface of the diaper because of the irregular contour of the embossed plastic outer layer.

European Patent 0048446 (BSF) (September 1980) and US Patent 4369786 (Miller) (January 1981) relate to refastenable tabs divided into half tabs which can be deployed separately for fastening and refastening.

Japanese Utility Model 57-74910 (Unicharm) (October 1980) is directed to the provision of reinforcing tapes on the bonding surfaces of the backing sheet to which the tape tabs are pressed on closure of the diaper. This particular document, published between the priority dates of the two patents in suit, led to the application to amend the Mölnlycke patent.

British Patent Specification 2091968A (Unicharm) (January 1981) is for a modified target tape, and US Patent 4410325 (Lare) (February 1981) relates to a fastening tab in which there is cleavage of the adhesive into two layers upon opening of the diaper, the two portions of adhesive being

again joined at the cleavage face upon reclosing.

European Patents 0080151 and 0080152 (BSF) (both November 1981) are directed respectively to a reverse type target tape, and a tape having separately removable sections.

It is therefore clear, as pointed out by Mr Arnold, that in the ten year period prior to the dates of the patentees' inventions considerable interest centred around the production of disposable diapers which could be refastened. Most effort seems to have been directed to improving the tape tab itself. However the Mesek, Sarge and Kimberly-Clark patents refer to strengthening the diaper in the front section or mother's bond area.

Before considering the two patents individually, I think it would be helpful to consider in more detail the development of reinforcement as a solution to the problem of refastenability, and the three most relevant prior patents (Mesek, Sarge and Kimberly-Clark). Mr Burkill submitted that the idea of external reinforcement to achieve refastenability was devised eight times, by Mr Mesek, Mr Dulle, Mr Sarge, Mr Cooper, Mr Ness, in connection with the two patents in suit and in connection with Unicharm (that is the Japanese utility model).

Mesek's US Patent No 3867940 (filed August 1973, published February 1975) is concerned with reinforcement of the water impervious backing sheet to prevent stretching and tearing. One of the principal issues in these proceedings is whether it discloses, or directs the skilled person to, film reinforcement in the mother's bond.

The specification explains that when pins are used to fasten the diaper the backing sheet is punctured by the pin, leading to tearing. Whilst adhesive tabs obviate the puncture problem the tabs may cause stretching and tearing of the backing sheet while the diaper is fastened, during

wearing or when the diaper is adjusted by the parent.

Mesek's general solution is to reinforce the manufacturer's bond, for example with high strength scrim in the form of cotton gauze or polyethylene fibres, or with a strong film, such as polyethylene terephthalate film. In a first embodiment (Figs 1-3) reinforcement material is bonded on the inner or outer surface of the backing sheet at the manufacturer's bond. The backing sheet is suitably formed of polyethylene, which may be smooth or embossed to improve its drape and feel, and according to lines 44-56 of col 5, the reinforcement may be scrim or film materials such as biaxially oriented polyethylene terephthalate.

In the second embodiment (Fig 4) registry problems in positioning the reinforcement at the anchoring location during high speed production are eliminated by providing reinforcement material which extends continuously along the marginal side portions of the backing sheet. Lines 17-21 of col 6 state that the reinforcement may be provided on the inner or outer surface of the backing sheet.

The third embodiment (Fig 5) is directed to a diaper in which reinforcement is also provided across the waist portion by bonding thereto scrim or other reinforcing material, thus providing reinforcement of the mother's bond. Mesek clearly identifies the refastenability problem and at least an outline solution, at col 6, lines 34-42, where he says:

"...the diaper is removed or readjusted by pulling the tab from the securing areas 12b in the waist portion of the backing sheet. Understandably this results in increased stress in the backing sheet in this area. To overcome this detaching stress, as well as the stresses generated by either type of tabs while the diaper is being worn by the infant, reinforcement

refastenability using a Mylar strip, though Professor Andrews suggested at the hearing that although the surface is described as smooth it may have had small points of roughness due to the use of anti-blocking agents to inhibit sticking of adjacent rolls of the film during storage. Dr Sagar's evidence refers to the complete transfer of adhesive from the tape tab to polyethylene terephthalate film, during adhesion tests, suggesting to my mind that Mr Dulle's polyethylene terephthalate was not smooth.

Mesek is widely referred to, for example in the specification in suit and in a number of the prior specifications, including Kimberly-Clark and Sarge. However, it appears never to have been commercialised and there is no evidence that even a prototype was made. At the hearing Mr Cooper said that he was unaware before 1982 of any the prior art cited, and in paragraph 3 of his affidavit Mr Dulle, who describes his duties as requiring the generation of ideas for solving technical problems, says that he does not recollect having seen the Mesek patent before making diapers incorporating Mylar strips.

Mr Burkill contended that Mesek promises refastenability, and that polypropylene film would be an obvious alternative to polyethylene terephthalate, and like polyethylene terephthalate would normally be smooth. Mr Floyd pointed out that the emphasis in Mesek is to reinforce the backing sheet and that this emphasis applies equally to reinforcement for pins and for tape tabs. He pointed out that no guidance is given of the surface characteristics required to produce refastenability with tape tabs and in his view the skilled worker finding polyethylene terephthalate unsuitable could not be expected to persevere indefinitely to achieve the effects promised.

Mr Cooper says in his first affidavit at paragraph 36 that biaxially oriented polypropylene film was well known by

1981 as an alternative to biaxially oriented polyethylene terephthalate film. Mr Wilson and Professor Andrews agree that it was a less expensive material. However, the steps needed to get from Mesek to the claims of the patent in suit amount to more than replacing polyethylene terephthalate by polypropylene. It is necessary also to use some such material, selected to have a smooth surface, instead of the preferred scrim, to put it on the outside, and to use it in the mother's bond region. I am not persuaded that it would be obvious for the skilled person wishing to produce a diaper having refastenability to modify Mesek's teaching in this particular way and produce the product that the patentees have now done.

The next prior patent to be considered is US Patent 4210144 (Sarge), which as I have already found, discloses a hot melt reinforcement. The applicants contend that this coating, referred to at col 6 lines 56-62, will in practice be smoother than the embossed backsheet. They allege that it is common general knowledge that a sheet material to be reinforced by a polymeric coating can in general equally well be reinforced by applying a molten coating as by bonding a preformed strip of plastics material to the sheet, and that it would be obvious to use polypropylene for this purpose. The patentees deny that a hot melt adhesive would give a smooth surface.

For the applicants Dr Sagar expresses the opinion that coatings of hot melt adhesives would be smooth although there might be undulations in the surface. In paragraph 33 of his first affidavit Mr Cooper asserts that the coating on the outer surface of the backsheet would serve as a strengthening zone and would permit sealing and resealing as stated in the abstract, and that the coating of hot melt adhesive would be smooth relative to the embossed backsheet. In paragraph 36 of his first affidavit Mr Wilson agrees that the coating would generally be smoother than an embossed film but that typically such

material has many surface imperfections and is not shiny. He expresses the view that the coating would have to be continuous or the tab would tear the area where the coating is not provided. He is also of the opinion that the coating process would be difficult to control, because polyethylene is likely to shrink due to heat and adds that as far as he is aware was never commercialised.

Professor Andrews says in paragraph 24 and 26 of his first affidavit that hot melt can be applied smooth by extrusion, but that the surface obtained depends on its production and application. In his view the hot melt is normally used to stick the backsheet to the top sheet, so that to put it on the outside is an impractical disclosure. He agreed that Sarge would work in easing peel, but only because of the stiffening effect of the reinforcement, there being no appreciation of the benefits available with smoothness on the outer face of the nappy. In paragraphs 15 and 18 of his third affidavit he draws attention to the difficulty of applying a hot melt adhesive to the outside surface because with high production speeds the adhesive would not solidify completely before folding, and to the problems of applying a hot melt material to the thin polyethylene backsheet which would tend to distort and pucker.

At the hearing he agreed that a chill roller would assist in preventing distortion of the polyethylene backsheet, although he expressed the view that any molten material used would have to be of relatively low molecular weight and would tend in consequence to be weak and brittle. In his opinion beads of glue would be easier to apply than a continuous layer because less trauma would be imposed on the thin polyethylene backsheet, the contact area being less and the beads cooling more rapidly. He expressed doubt as to whether the hot melt adhesive based on polypropylene used in example 2 of Kimberly-Clark to reinforce the inner surface of the backing sheet could be

satisfactorily used because of its relatively high melting point, and explained that the alternative adhesive used in example 3 of Kimberly-Clark, formulated from ethylene vinyl acetate based resins, would be mechanically very weak compared to polypropylene and polyethylene. Furthermore hot melt adhesives cannot be oriented, which is important in order to establish good toughness and flexibility, and whilst brittleness would not be important with beads or where the adhesive was used to bond together two layers, in a film there would be a tendency for cracking to occur across the layer. Also at the hearing Mr Widlund explained that hot melt adhesives sometimes have "a sort of fat surface" which had poor adhesion.

Whilst it is I think clear from the passage at lines 56-62 of col 6 that Sarge envisages reinforcing the backsheet in the mother's bond area by coating the outer surface with a material having low elongation so that the tape tabs can be released and refastened, the main emphasis seems to me to be that the coating should be applied to the inwardly facing surface of the backsheet with adhesive. Although in paragraph 13 of his first affidavit Dr Sagar says that he is confident that the coating of hot melt adhesive would be smooth, he admits that he was unable due to shortage of time and materials to study the surface characteristics of such a coating and that there might be surface undulations. As suggested in the patentees' evidence, the application of a hot molten material, and in particular a hot melt adhesive, to the outside of the backsheet would apparently give rise to manufacturing problems, and the surface of the coating would not necessarily be smooth. Indeed there is no suggestion in the cited specification that smoothness would be required to achieve satisfactory peel and shear properties. In the absence of any specific indication that the surface should be smooth, as I see it, the applicants' allegation of lack of novelty in respect of Sarge must necessarily fail.

The applicants' allegation that it would be obvious to replace the reinforcement provided by the molten coating by a preformed reinforcing strip, suitably of polypropylene, seems to me to fail to take account of the teaching of Sarge at lines 10-18 of col 2 that additional structural members are not required. In addition, Mr Swayze states that when implementing Mr Sarge's suggestion of using a hot melt adhesive coating as reinforcement Procter & Gamble applied it on the inside of the backsheet. He also explains that when making prototypes incorporating Mr Dulle's idea of reinforcing with a strip of Mylar he bonded the strips to the inside of the backing sheet partly because he thought that reinforcement inside would be satisfactory, and partly because he felt that mothers would not like to see a shiny film on the outside of the embossed backsheet since this would upset the perception of softness that is given by the nature of the backsheet. Mr Cooper agrees with his latter reservation. It seems to me that there is nothing in the cited Sarge specification that could be regarded as leading towards replacement of the coating by a reinforcing strip incorporating the features essential to the patentees' invention. I find in consequence that the applicants' allegation of lack of inventive step in respect of Sarge fails.

GB Patent 2054350A (Kimberly-Clark) to which I have already referred is concerned with the application of a hot-melt adhesive on the inwardly facing surface of thin film backing sheet in the zones where the ends of the fastening tapes are secured during use, to increase tear resistance, elastic limit, stiffness and tensile load-bearing ability, so that the adhered tape may be peeled away without damaging the surface, thus permitting refastenability. There is no suggestion that the adhesive should be applied to the outer surface of the backing sheet although the applicants allege that there is no inventive step in providing the reinforcement on the

of Sarge which would indicate that the provision of an embossed surface would lead to improved fastening and re-fastening of the tape tabs.

At the hearing Mr Widlund said that it would be possible to emboss the surface of a coating of hot melt adhesive although he thought that the pattern would not stay very clear because the material would not be hard and would tend to float and lose the embossed pattern. From the teaching of the Sarge specification and the evidence in this case there is no suggestion that embossing of the hot melt adhesive coating was considered. I therefore find the allegation of lack of inventive step based on the disclosure of Sarge fails. It follows that in view of my findings in relation to the disclosure of Kimberly-Clark in the BSF proceedings that the allegation of lack of inventive step in relation to this citation also fails.

In respect of the applicants' allegation that it would be obvious to replace the target tapes of Ness and Tritsch by a permanently bonded inelastic plastic strip the surface of which is embossed to obtain any particular degree of adhesion, Mr Floyd contended that the Mölnlycke invention is an entirely different approach from the tape tab system since it is directed to solving the problem of refastening by modifying the diaper surface itself rather than the tape tabs.

In his first affidavit Mr Widlund refers to the disadvantage associated with target tapes that it is impossible to readjust the diaper when the flexible backsheet stretches, although when cross-examined at the hearing he conceded that the larger target tape in Tritsch would allow some readjustment but as far as he was aware this embodiment had not been commercialised. Mr Wilson refers in his first affidavit to the small strengthened area of the target tape being insufficient to prevent backsheet twisting and peel setting in and the difficulty

of removing the tab from the target. Mr Cooper also agreed that the target tape was not ideal as is evident from Procter & Gamble's decision to withdraw the system.

Mr Floyd contended that the statement in Ness at column 2 that there was no need to apply a coating or additional material to the surface of the diaper to which it is attached for closure would discourage the skilled worker from applying a reinforcing strip to the diaper.

It seems to me that there are two lines of approach to the problem of refastenability. On the one hand there is the tape tab system where the reusable bonding surface is provided by the tape tab itself. On the other hand there is the reinforcement of the diaper itself. I do not consider it obvious to move from one of these lines of approach to the other and provide a strip, particularly having regard to the passage at column 2 of Ness to which Mr Floyd invited my attention. I note moreover that whilst it is known to control surface adhesion of the target surface by the provision of a release coating there is no evidence of a tape tab system incorporated an embossed surface to control adhesion. In consequence I am not satisfied that the applicants' allegation of obviousness based on Ness and Tritsch is established.

I have previously indicated that I am not persuaded that the skilled worker in the diaper art would turn to the packaging art with any expectation of solving the problems associated with diaper fastening and I do not consider that the disclosures of King, Godoy, Levine and Hamaguchi assist the applicants' allegation of lack of inventive step in these proceedings. Moreover there is no suggestion in any of these documents that adhesion may be controlled by embossing the surface of the attaching surface.

In Japanese Utility Model Publication 57-74910 (Unicharm) reinforcing tape, eg of synthetic resin film or Kraft

paper, is bonded to the front part of the diaper corresponding to a position where a coupling part of coupling tape is bonded to the water impermeable backsheet, thereby allowing refastenability. In paragraph 36 and 37 of his first affidavit Mr Cooper contends that the two strips could be replaced by a single transverse piece and that an embossed film would be considered suitable for use for the strip. Mr Widlund however points out in paragraph 24 of his first affidavit that the permanent receiving areas bonded to the front part of the backsheet are effectively a permanent target tape system with the same associated disadvantages, and that there is no suggestion of the provision of a single elongate inelastic embossed strip positioned transversely across the front of the diaper. In paragraphs 3 and 32 of his second affidavit Mr Cooper says that he does not regard the provisions of a single transverse strip as inventive.

It seems to me that although Unicharm states that the reinforced area may be larger than the coupling part of the coupling tape it appears to be concerned with the problems of stretching and tearing of the backsheet in achieving refastenability. It does not recognise the problems of stretching and sagging in the waist area, or of the desirability of embossing the surface of the reinforcing film tape. Even with enlarged reinforcing areas which it will be recalled had been foreshadowed in the Tritsch patent, the arrangement in Unicharm unlike the target tape system suffers from the disadvantage referred to by Mr Widlund in his first affidavit that the mother has no control over the particular area of bonding, which is preordained by the manufacturer, although as suggested by Mr Burkill the manufacturer would presumably adjust the size to take account of fat babies and thin babies.

In his first affidavit Mr Cooper concludes that if the reinforced zones were enlarged sufficiently they would eventually merge into a single strip, which in any event

would be easier to apply during manufacture than two separate pieces. Bearing in mind the additional cost apparently involved in enlarging the areas of reinforcement in this manner there seems to me to be no reason for the skilled worker following the teaching of Unicharm to replace the two areas of reinforcement by a single strip in the form of what was referred to at the hearing at a "half belt", which Mr Cooper agreed would prevent sagging of the diaper, without the insight of the patentees' invention.

From the references in Unicharm to the use of Kraft paper in addition to plastic film, it seems that these materials are used solely to reinforce the diaper in the securing areas, there being no appreciation that adhesion could be controlled by embossing the surface of the reinforcing material. I am therefore not satisfied that the applicants' allegation of lack of inventive step has been established.

In the result, therefore, I refuse the application for revocation and allow the application to amend the patent, subject to the patentees filing, within six weeks of the date of this decision, a copy of the specification incorporating the amendments and complying with Rule 40(7) of the Patents Rules 1982.

Both parties in each of the proceedings have asked for costs. In the BSF proceedings, the patentees have been entirely successful. They produced for cross-examination at the applicants' request their witnesses Professor Andrews, Mr Wilson and Mr Chambers. In view of this, I award BSF the sum of £2250 as a contribution to their costs and direct that this be paid to them by the applicants for revocation.

In the Mölnlycke proceedings, the application for

revocation has resulted in substantial amendments to the patent, though the applicants continued with an attack on the patent as proposed to be amended. Allowing on the one hand for the applicants' success in restricting the patent and on the other hand for the overall success of the patentees, and for the expense to the patentees of producing their witnesses Mr Widlund and Mr Hemberg for cross-examination, I award Mölnlycke the sum of £1250 as a contribution to their costs and direct that this be paid to them by the applicants for revocation.

At the hearing Mr Floyd requested that, should I decide to dismiss the applications for revocation, the patentees be provided with a certificate of contested validity within the provisions of Section 65 of the Act. In view of my findings in respect of both applications for revocation it seems to me appropriate that I should accede to this request. I therefore certify that the validity of each of the patents has been contested, and that each patent has been found valid in respect of the grounds pleaded under Section 72 of the Act. The certificate for the BSF patent applies to the claims of the patent as granted. The certificate for the Mölnlycke patent applies to the claims as proposed to be amended, and is therefore subject to the condition stated above relating to the filing of a copy of the specification incorporating the amendments.

Dated this ^{1st}/₂ day of March 1990

W J LYON

Superintending Examiner, acting for the Comptroller

THE PATENT OFFICE

WJLAAJ

52

