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(54) Titre : RESINE A UTILISER POUR CREER UN PLI DANS UN VETEMENT, METHODE, APPAREIL DE MISE EN OEUVRE ET VETEMENT COMPRENANT LA RESINE

(54) Title: RESIN FOR USE IN SETTING A CREASE IN A GARMENT, A METHOD AND APPARATUS FOR APPLYING THE SAME AND A GARMENT INCLUDING THE RESIN

(57) Abrégé/Abstract:
The invention relates to a resin for use in setting a crease in a garment, a method and apparatus for applying the same and a garment including the resin. The resin typically includes a silicone and a catalyst for commencing the curing of the resin when the same is exposed to moisture in ambient environmental conditions once applied onto the base of the crease line of the garment as a ribbon or line of resin, The resin is tin free and in one embodiment has the characteristic of being non- slump initially and then changing to having a flowable or self levelling characteristic once applied to the crease line so as to absorb into and bond with the fibres of the fabric from which the garment is formed before fully hardening.

Abstract

The invention relates to a resin for use in setting a crease in a garment, a method and apparatus for applying the same and a garment including the resin. The resin typically includes a silicone and a catalyst for commencing the curing of the resin when the same is exposed to moisture in ambient environmental conditions once applied onto the base of the crease line of the garment as a ribbon or line of resin, The resin is tin free and in one embodiment has the characteristic of being non-slump initially and then changing to having a flowable or self levelling characteristic once applied to the crease line so as to absorb into and bond with the fibres of the fabric from which the garment is formed before fully hardening.

Date Reçue/Date Received 2023-07-17

Resin for use in setting a crease in a garment, a method and apparatus for applying the same and a Garment including the resin

The invention to which this application relates is a resin which is provided for use to set a crease in a garment into which the resin is applied. The crease typically extends along at least part of the length of a trouser leg, shirt sleeve or portion of a shirt but can be provided at any required location on the garment and it will be appreciated that for each garment, for example a pair of trousers, there will be a number of crease lines each of which receives the line of resin therealong. The resin is applied as a ribbon, i.e. a narrow line of resin and cannot be applied as a large area surface coating as it will restrict the flexibility and/or comfort of wearing the garment. The aim is to provide the line of resin along the inner surface of the garment so that it lies along the base of the V shaped crease line so as to provide greater strength and rigidity to the crease line and hence allow the crease line shape to be retain for a longer period of time than would be the case if the crease line was only formed by ironing or pressing the same only into the garment material. This therefore means that the external appearance of the garment is retained for a longer period of time with the crease line visible externally. The line or ribbon of resin is typically applied soon after the manufacture of the garment and then may be applied from time to time, typically as an optional extra as part of a garment cleaning service.

The resin is initially provided in a fluid condition and held in a reservoir, in one example in the form of a cartridge from which the resin is dispensed in a controlled manner as a line or ribbon of the fluid resin, via an exit aperture. Alternatively, the resin can be held in a larger reservoir such as a drum and then pumped as a fluid supply from the drum to an applicator, which may or may not include a smaller holding chamber, and from which the fluid resin is applied along the crease line as a line or ribbon from an exit aperture.

In the cartridge or other dispensing means the conventional resin is provided so that once applied to the crease, the same starts to cure and harden upon exposure to atmospheric conditions and therefore forms a relatively hard, solid ribbon of resin along the crease line. This has the effect of maintaining the crease line in the garment for a longer period of time than would be the case if the resin had not been applied thereto.

Date Reçue/Date Received 2023-07-17

The resin is applied on the internal surface of the garment so that when the garment is worn and the rein has been applied correctly, the once the resin has hardened, the resin is not visible externally of the garment whilst the crease line in the garment is maintained. This method, and the resin, has been used for a considerable period of time and with significant commercial success worldwide. However, it is found that there is an increasing resistance, both from legislators and commercial users, to use the conventional resin which typically includes tin or an organo tin component, typically as a curing component. The resistance is due to the fact that the use of tin, or organo-tin or other tin derivatives in the resin, and the use of the resin in garments which are worn by persons, is deemed to represent a risk of health problems to, primarily, the operators who are applying the resin material to the garments but also, potentially, to the end user. This is as a result of research which indicates that tin, in an isolated condition and without use in combination with other components, could possibly be carcinogenic.

The applicant has realised that there is a potential problem and therefore an aim of the present invention is to provide a resin material which is sufficiently fluid so that during the application process of the resin, the resin can be applied, using the application apparatus as a line or ribbon and, once applied, will harden to a sufficient extent so as to allow the benefit of maintaining the crease in the garment for an extended period of time.

A further aim is to provide the resin in a form which allows the same, once applied, to be substantially invisible to the naked eye and have no detrimental effect on the appearance of the garment and furthermore to ensure that the resin is retained in a condition so that, once applied to the garment the cured resin does not become easily displaced or cracked.

The applicant, in their co-pending application GB2606925, the contents of which are incorporated herein by reference, describes the provision of a resin which has no tin and/or organo tin component.

The aim of the current invention is to provide further forms of resin which have the benefit of being tin and/or organo tin free and which still have the ability for the resin to be applied in a sufficiently fluid state to allow the same to be applied as a

Date Reçue/Date Received 2023-07-17

ribbon along the garment crease and then cure and harden so as to be retained in position along the base of the crease so as to maintain the crease in the garment. A further aim is to provide a method of application of the improved resin and to provide garments with a crease line which includes a ribbon of the resin material along at least part of the same and which resin is located on the interior surface of the garment when the garment is being worn.

In a first aspect of the invention, there is provided a resin for application as a ribbon or line along at least part of a crease line of a garment to assist in extending the period of time of retention of the said crease line in the garment, said resin provided to be usable in a first, substantially fluid, form for a sufficient period of time to allow the resin to be applied along the crease line and attach to fibres of fabric adjacent to said crease line and, once applied, cures so as to take a second form in which the same has hardened and bonded to the said crease line and wherein the resin includes a catalyst to assist in the curing of the resin, said catalyst including any, or any combination, of platinum, peroxide, Organic amine, titanium, zirconium, tertiary amine, organosilane, iron, copper and/or a non-metal.

Typically said curing agent is a substantially tin and/or organo-tin free composition and preferably includes no tin or organo-tin or tin derivatives.

The provision of a resin which is tin or organo tin free means that any potential health risk due to the presence of tin is avoided, both at the time of preparation and filling of the cartridges, the dispensing of the resin onto the garment crease line and also during the wearing of the garment with the resin applied thereto.

In one embodiment, the resin includes a curing system in the form of an acetate, and in one embodiment a crosslinking acetate.

In one embodiment the resin includes amorphous silicate hydrate, methylsilanetriyl-triacetate, diacetoxydi-tert-butoxysilane, hexanoic acid, dodecamethyl cyclohexasiloxane, acetic acid and octamethylcyclotetrasiloxane.

In one embodiment the amorphous silicate hydrate is replaced with bismuth tris(2-ethylhexanoate).

Date Reçue/Date Received 2023-07-17

In one embodiment the resin includes triacetoxyethylsilane, octamethyl-cyclotetrasiloxane, Polybutylene terephthalate (PBT) and/or substances including dodecamethylcyclohexasilosane, and decamethylcyclopentasiloxane, also sometimes referred to as vRVB substances.

In whichever embodiment, the curing effect of the curing agent and hence the hardening of the resin occurs once the resin has been applied onto the garment and along the crease line.

Typically, the curing occurs as a result of the exposure of the resin to the surrounding environment and, typically, as a result of exposure to moisture in the environment in which the resin is applied. However in another embodiment curing may occur, or is encouraged, by mixing together of curing system components and/or exposure to a specific property such as heat or Ultra Violet light. Typically the need for a specific property is due to the particular type of curing agent or curing agent blend which is included in the resin.

Typically the resin includes silicone and in one embodiment is a vulcanised silicone rubber. In one embodiment the resin, once cured, resists damage at ongoing exposure to ambient environment conditions up to 180 degrees Celsius.

Typically the resin is substantially colourless.

Typically the resin is of a type which is a substantially non-slump to flowable resin, also referred to as a non-slump to self levelling resin. This means that when the resin is applied from the reservoir the same is in a substantially non-slumping form which means that it does not substantially slump to alter its shape from that in which it was applied and therefore consistently retains its shape but once applied to the garment fabric and curing is occurring due to exposure to the moisture in the ambient environment the resin takes a more flowable form which allows the resin to absorb into the fibres of the fabric at the crease line and hence bond more effectively to the fabric, and in turn has an improved effect on retaining the crease for a prolonged period of time.

Date Reçue/Date Received 2023-07-17

In a further aspect of the invention there is provided a method of applying a resin material to a crease line of a garment so as to assist in prolonging the retention of the crease line, said method comprising the steps of providing a supply of a resin material in a fluid form to a dispensing means having an exit aperture for the controlled movement of the fluid resin therethrough and guiding the relative movement of the exit aperture along said crease line formed in the said garment so that the fluid resin is applied from the exit aperture along the base of the substantially V shaped crease line as a ribbon or line, allowing said resin to cure and so harden and bond the same to the fabric from which the garment is formed along the crease line and wherein a catalyst is provided in the resin to allow the same to cure and including as the catalyst any, or any combination of, platinum, peroxide, Organic amine, titanium, zirconium, tertiary amine, organosilane, iron, copper and/or a non-metal.

In one embodiment a curing system included in the resin is a crosslinking acetate.

In one embodiment when the resin is applied from the exit aperture the resin is in a substantially non-slumping form and once applied from said exit aperture and typically when curing will have started to occur, the resin changes to a more flowable form to allow the resin to absorb into and bond with those fibres of the fabric adjacent the crease line and with which the resin contacts.

In a further aspect of the invention there is provided a garment including at least one crease line formed therein and along at least part of a crease line in which a resin material as defined herein is applied to harden and bond to the garment fabric along the said at least part of the crease line so as to aid in the retention of the crease line in the garment.

In one embodiment the said crease line is V -shaped in cross section and the said resin is applied along the base of at least part of the crease line and on the body facing surface of the garment when the garment is worn such that the resin lies between the garment fabric and the wearer of the garment.

In one embodiment the garment includes a plurality of crease lines along which the resin is applied.

Date Reçue/Date Received 2023-07-17

In a yet further aspect of the invention there is provided apparatus for use in the application of a resin as defined herein along a crease line of a garment, said apparatus including means for moving said resin in a fluid condition from a reservoir of said resin to and through an exit aperture to which the reservoir is connected and means for causing relative movement of the exit aperture and garment so as to apply the resin as a ribbon or line along the base of at least part of said crease line in a fluid condition to then cure and harden and bond to the garment fabric.

In one embodiment the said reservoir and exit aperture and at least part of the means for moving said resin are provided as integral parts of a cartridge which also includes, or is attached to, guide means to guide movement of the cartridge along the said crease line as the resin is applied along the same.

In one embodiment further guide means are provided in the form of a support surface in which one or more grooves are formed to receive and retain therealong a crease line of the garment along which the resin is applied.

In one embodiment the curing activation occurs during and/or after the resin material has been applied to the crease line of a garment and the resin is absorbed at least partially into the garment and hardens.

Holding means may also be included as part of the cartridge, to allow guided relative movement of the exit aperture and crease line to apply said resin along the base thereof as the resin is pumped or otherwise moved from the said reservoir towards and through the said exit aperture to be dispensed.

Typically the quantity of resin, size of reservoir and/or size of cartridge is selected with respect to a particular use or number of uses required from each cartridge. In one embodiment the said cartridge is refillable.

In one embodiment the reservoir is a drum or other container separate to the application means and is connected thereto via a pipe or tube so as to pump the resin towards the application means exit aperture. In this embodiment the application means includes a body portion on which the exit aperture and guide means may be located.

Date Reçue/Date Received 2023-07-17

Specific embodiments of the invention are now described with reference to the accompanying drawings wherein:

Figures 1a illustrates an end view of one embodiment of apparatus used to apply the resin to a crease line of a garment;

Figure 1b illustrates a front view of one embodiment of the apparatus used for applying a resin material to harden along a crease line of a garment;

Figure 2 illustrates a further embodiment of apparatus for use to apply the resin in accordance with the invention; and

Figure 3a illustrates the resin as it is applied to the crease line of the garment shown in cross section in Figure 1a in accordance with one embodiment of the invention; and

Figure 3b illustrates the resin having been applied to the crease line of the garment of Figure 3a in accordance with one embodiment of the invention.

Referring to the Figures 1a and b, there is illustrated apparatus 2 for use in the application of a fluid resin material 12 to a crease line 6 of a garment in order to increase the permanence, of the crease line i.e. duration of time in which the crease line is retained, in the garment 8 and thereby maintaining the desired appearance of the garment over a longer period of time. Typically, the resin material 12 is applied at the time of manufacture of the garment and/or thereafter from time to time, such as when garment is cleaned and typically, the application of the resin is applied by a commercial manufacturer or cleaner rather than being applied by the person who has purchased and wears the garment. The garment may of any form in which there is provided a crease line but most typically will be trousers or a shirt.

In the embodiment shown, the apparatus 2 which is used to apply the resin includes a fluid movement means in the form of a source of a pressured gas such as air and an air pump 36 is connected to a control means 38 which can be provided, as shown in this embodiment, as a hand operated switch located on mounting means 40. The air is supplied to an end 30 of a cartridge 16 via an air tube 34 and is connected to

Date Reçue/Date Received 2023-07-17

the air pump 36 via air tube 35. The size and design of the cartridge may change to suit particular uses. The air pump can be switched on and off and hence control of the supply of the pressurised air is achieved via the switch 38 which is connected to the tubes 34 and 35. The air, which is pressurised and exits the air pump, is passed to the entrance aperture 30 of the cartridge 16. The cartridge 16 includes a body 28 in which there is defined a reservoir for the fluid resin and which is connected to the exit aperture. A piston 10 is provided to be moved along the reservoir and, intermediate the piston and the exit aperture 26 of the cartridge, there is provided a quantity of the resin material 12 in a fluid condition. The cartridge body mounting means 40 include the finger switch 38 for the control of the air pump and which can be gripped by the user when moving the cartridge.

The cartridge, in this example, includes guide means 14 at spaced intervals along the length of the cartridge body as shown and these lie along and contact with the crease line and lie along the same axis as the elongate exit aperture 26 of the cartridge. The guide means are provided to be received and pass along the crease line on the surface of the garment which faces towards the wearer's body when the garment is to be worn so that the guide means guide the cartridge as it is moved along the crease line to apply the resin along the base 5 of the substantially V -shaped crease line. The crease line lies in a V-shaped or gull-wing shaped groove 4 provided on a support surface or arm 20 and this acts to maintain the crease line along the required linear path with the base 5 exposed and the cartridge is moved along the internal surface of the garment in the direction of arrow 18 and as the relative movement between the garment and the cartridge occurs, so the operation of the air pump operation moves the piston 10 along the cartridge reservoir to move the resin material 12 towards and through the exit aperture 26 to be dispensed as a line or ribbon of the resin material along the base 5 of the crease line 6.

In other forms of the apparatus the resin may be supplied from a reservoir of the resin to an exit aperture 26 provided in a holding means and the holding means is physically separate from the reservoir as is shown in Figure 2.

In Figure 2 there is illustrated an alternative embodiment of the apparatus and for ease of reference the same reference numerals are used for the same features as the embodiment shown in Figures 1a and b. The application of the resin material is also

Date Reçue/Date Received 2023-07-17

applied along the garment crease line 6 in a similar manner to that shown in Figure 1a but in this embodiment no cartridge is provided and instead the reservoir 44 is formed by a drum or container 42 which includes the resin material. The reservoir is connected via tubes 48, 50 and via a pump 46 to application means 52 which include a mounting means including a gripping or holding portion 54 including guide means in the form of skis or skids or wheels 56. The tube is connected to the exit aperture 26 and through the same to be dispensed along the base of crease 6 of the garment 8 as previously described with the crease and garment located on a groove and support table 58 or a similar support arm 20 to that shown in the embodiment of Figures 1a and b.

In either embodiment, when the resin is dispensed from the exit aperture, the resin is still in a fluid condition and therefore flows out of the exit aperture 26 and onto and along the crease line.

Once the resin material has been applied to, and typically has passed at least partially into the garment fabric along the base of the crease line, the exposure of the resin to the surrounding ambient environment and in particular the moisture in the ambient environment, which most typically is a factory or industrial space, causes the catalyst contained within the resin to be activated to start to cure and harden the resin and as it does so bond to the fibres of the fabric of the garment adjacent to and lying along the crease line 6 of the garment 8 and when hardened and bonded retains the V-shaped form of the crease line 6 and thereby ensures that if the resin material has been applied correctly to the base 5 of the crease line 6, the resin assists in maintaining the form of the crease in the garment for a longer period of time than would be the case if the resin had not been applied to the crease line.

In accordance with the invention, the resin material 12, is provided with a catalyst in the form of any or any combination of platinum, peroxide, Organic amine, titanium, zirconium, tertiary amine, organosilane, iron, copper and/or a non-metal and react to exposure to the ambient environment and particularly the moisture in the environment.

However, in order to further encourage a relatively fast curing effect, or if the curing agent in the resin is changed, then it is possible that the resin application apparatus

Date Reçue/Date Received 2023-07-17

will include apparatus for providing, for example, heat or creating infra-red or ultra-violet or other curing effects on the resin once it has been applied so as to cure or improve the curing of the resin. An example of the apparatus for achieving this is provided in Figure 2 which illustrates a unit 60 positioned above the garment 8 at the location at which the resin will already have been applied and the unit can then emit a curing means such as heat or suitable light onto the resin line to cure the same.

A platinum containing catalyst is found to effectively initiate the cross-linking of the silicone polymer provided in the resin and provide the required rate of cure and are safer and more environmentally friendly than tin containing resins..

Peroxide containing catalysts are effective when used with the silicone contained in the resin in accordance with the invention and initiate the curing process through a free radical mechanism and can be used in relatively high-temperature application procedures and still provide good curing performance.

Organic amine catalysts are effective when used with the silicone contained in the resin and promote the curing of the resin by initiating the condensation of silanol groups when exposed to moisture. They provide the required cure rates for the resin to allow the same to be applied to form and retain the crease line in the garment.

Titanium containing catalysts can be used in the resin and one example of which is titanium chelates and achieve good cure rates and are generally considered safe and have low toxicity.

Zirconium compounds, such as zirconium acetylacetonate, can be used as catalysts in the silicone containing resin to promote the curing process and provide good adhesion to the fibres of the fabric and durability in the maintenance of the crease line and have good stability and resistance to water and other chemicals.

Tertiary Amine Catalysts such as triethylenediamine (TEDA), can be used as the catalyst for the resin as they are effective in promoting the cure reaction.

Date Reçue/Date Received 2023-07-17

An organo silate catalyst can be used as the curing agent for the resin and in particular silanated polymers, end-capped with dimethoxy, trimethoxy or diethoxy silane groups and also eliminates methanol emissions.

Iron and /or copper catalysts such as iron acetylacetonate or iron naphthenate, can be used as the catalyst for the silicone containing resin to promote the curing reaction and offer good cure rates.

Non-metal catalysts can be used as the catalyst such as organic salts, such as onium salts, or organic bases, such as guanidine derivatives to initiate the curing process and provide good cure rates.

Referring now to Figures 3a and b there is illustrated the manner in which the resin used has a non slumping to flowable characteristic. It is found that this assists in the application of the resin whilst ensuring the best possible bonding of the resin to the fabric once applied. In Figure 3a there is shown the resin as it is applied from the exit aperture 26 into the crease line 6 and onto the base 5 and typically as soon as the resin leaves the exit aperture and is exposed to the ambient environment, the catalyst in the resin will start the curing effect of the resin. As shown in Figure 3a it is typically the case that the resin will initially have the form of a body or "blob" 62 of resin in which the same has the substantially non-slumping characteristic. The size of the body 62 and speed of curing will be affected by the parameters of the size of exit aperture 26, the speed of movement along the crease line of the exit apertures and the ambient environment conditions.

However at or soon after exposure to the ambient environment conditions when the resin leaves the exit aperture 26, the characteristic of the resin will change towards a flowable characteristic which means that resin 64 starts to absorb into and bond with the fibres 66 of the fabric of the garment 8 adjacent to the base 5 of the crease line 6 as illustrated in Figure 3b. This improves the bonding and retention of the subsequently hardened fully cured resin with the fabric and hence retention of the crease line 6 shape. This change from the non-slumping to flowable characteristic of the resin allows, in conjunction with the control of the parameters referred to above, the control of the application of the resin to allow the same to absorb into and/or bond with the fabric as the resin cures and hardens. It is also important to

Date Reçue/Date Received 2023-07-17

control the extent of absorption such that the resin does not pass through to the opposing surface of the fabric and become viewable externally of the garment when the garment is worn. Typically this is achieved with respect to controlling the amount of resin applied and also with respect to the viscosity of the resin, the speed of relative movement between garment and the exit aperture as the resin is applied along the crease line, the rate of curing of the resin and the particular type and characteristics of the fabric of the garment to which the resin is applied at that instant of time.

In one example the resin which is used is colourless and includes silicone rubber and one or more of the catalysts as herein described and, in ambient environmental conditions of a temperature of 23 degrees Celsius and 50% relative humidity has a curing speed in the range of 1.5 to 1.7 mm/d when exposed to the ambient conditions and is preferably applied such that the line of resin has a thickness less than 0.75 mm..

Thus, in accordance with the invention there is provided a means of extending the length of duration of retention of a crease line in a garment using a resin material which is environmentally friendly and has reduced potential health impact as the curing agent or catalysts used in the resin, and the resin as a whole, is substantially free from tin, organo-tin and any tin compounds and so concerns with regard to health and safety relating to the usage of those materials are overcome and avoided. At the same time the effectiveness of the resin is improved by the provision of the same in the format as herein described.

Date Reçue/Date Received 2023-07-17

CLAIMS

1.A resin for application as a ribbon or line along at least part of a crease line of a garment to assist in extending the period of time of retention of the said crease line in the garment, said resin provided to be usable in a first, substantially fluid, form for a sufficient period of time to allow the resin to be applied along the crease line and attach to fibres of fabric adjacent to said crease line and, once applied, cures so as to take a second form in which the same has hardened and bonded to the said crease line and wherein the resin includes a catalyst to assist in the curing of the resin, said catalyst including any, or any combination, of platinum, peroxide, Organic amine, titanium, zirconium, tertiary amine, organosilane, iron, copper and/or a non-metal.

2.A resin according to claim 1 wherein the resin includes a curing system including an acetate.

3.A resin according to claim 2 wherein the acetate is a crosslinking acetate.

4.A resin according to any of the preceding claims wherein the resin includes any or any combination of amorphous silicate hydrate, methylsilanetriyl-triacetate, diacetoxydi-tert-butoxysilane, hexanoic acid, dodecamethyl cyclohexasiloxane, acetic acid bismuth tris(2-ethylhexanoate) and/or octamethylcyclotetrasiloxane.

5 A resin according to any of the preceding claims wherein the resin includes any or any combination of triacetoxyethylsilane, octamethyl-cyclotetrasiloxane, Polybutylene terephthalate (PBT) and/or substances including dodecamethylcyclohexasilosane, and decamethylcyclopentasiloxane, also sometimes referred to as vRVB substances.

6 A resin according to any of the preceding claims wherein the curing of the resin occurs as a result of the exposure of the resin to the ambient environment and, in particular moisture in the said ambient environment in which the resin is applied to the garment.

Date Reçue/Date Received 2023-07-17

7 A resin according to any of claims 1-5 wherein the resin cures as a result of selective mixing together of curing system components contained within the resin.

8 A resin according to any of the claims 1-5 wherein the curing of the resin occurs as a result of the exposure of the resin to heat at a temperature greater than that of the ambient environment and/or Ultra Violet light.

9 A resin according to any of the preceding claims wherein the resin includes silicone.

10 A resin according to claim 9 wherein the silicone is a vulcanised silicone rubber.

11. A resin according to any of the preceding claims wherein the resin, once cured resists damage at ongoing exposure to ambient environment conditions up to 180 degrees Celsius.

12. A resin according to any of the preceding claims wherein the resin is substantially colourless.

13. A resin according to any of the preceding claims wherein the resin has the characteristics of a substantially non-slump to flowable resin.

14. A method of applying a resin material to a crease line of a garment so as to assist in prolonging the retention of the crease line, said method comprising the steps of providing a supply of a resin material in a fluid form to a dispensing means having an exit aperture for the controlled movement of the fluid resin therethrough and guiding the relative movement of the exit aperture along said crease line formed in the said garment so that the fluid resin is applied from the exit aperture along the base of the substantially V shaped crease line as a ribbon or line, allowing said resin to cure and so harden and bond the same to the fabric from which the garment is formed along the crease line and wherein a catalyst is provided in the resin to allow the same to cure and including as the catalyst any, or any combination of, platinum, peroxide, Organic amine, titanium, zirconium, tertiary amine, organosilane, iron, copper and/or a non-metal.

Date Reçue/Date Received 2023-07-17

15. A method according to claim 14 wherein the curing system included in the resin is a crosslinking acetate.

16 A method according to any of claims 14 and 15 wherein when the resin is applied from the exit aperture the resin is in a substantially non-slumping form and once leaving the exit aperture the resin changes to a more flowable form to allow the resin to absorb into and bond with those fibres of the fabric adjacent to the crease line and with which the resin contacts.

17. A garment including at least one crease line formed therein and along at least part of a crease line in which a resin material as defined in any of claims 1-13 is applied to harden and bond to the garment fabric along the said at least part of the crease line so as to aid in the retention of the crease line in the garment.

18 A garment according to claim 17 wherein the said crease line is V -shaped in cross section and the said resin is applied along the base of at least part of the crease line and on the body facing surface of the garment when the garment is worn such that the resin lies between the garment fabric and the wearer of the garment.

19 A garment according to any of claims 17 and 18 wherein the garment includes a plurality of crease lines along which the resin is applied.

20 Apparatus for use in the application of a resin along a crease line of a garment, said apparatus including means for moving said resin in a fluid condition from a reservoir of said resin as defined in any of claims 1-13 to and through an exit aperture to which the reservoir is connected and means for causing relative movement of the exit aperture and garment so as to apply the resin as a ribbon or line along the base of at least part of said crease line in a fluid condition to then cure and harden and bond to the garment fabric.

21 Apparatus according to claim 20 wherein the said reservoir and exit aperture and at least part of the means for moving said resin are provided as integral parts of a cartridge which also includes, or is attached to, guide means to guide movement of the cartridge along the said crease line as the resin is applied along the same.

Date Reçue/Date Received 2023-07-17

22. Apparatus according to either of claims 20 or 21 wherein further guide means are provided in the form of a support surface in which one or more grooves are formed to receive and retain therealong a crease line of the garment along which the resin is applied.

5

Date Reçue/Date Received 2023-07-17

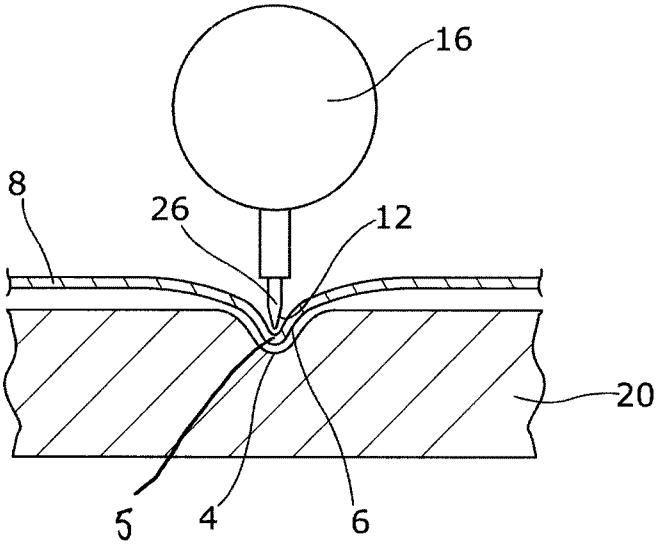


Figure 1a

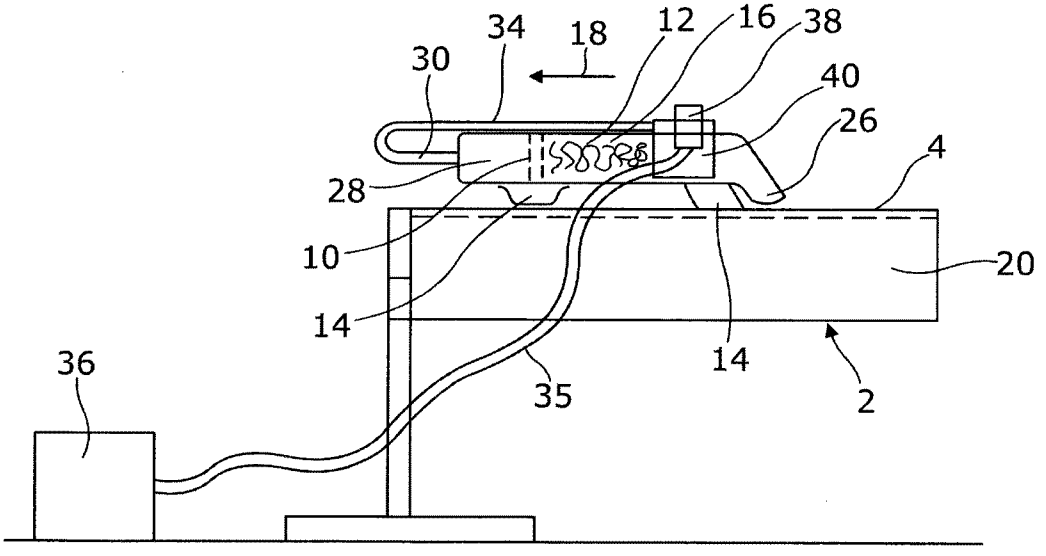


Figure 1b

Date Reçue/Date Received 2023-07-17

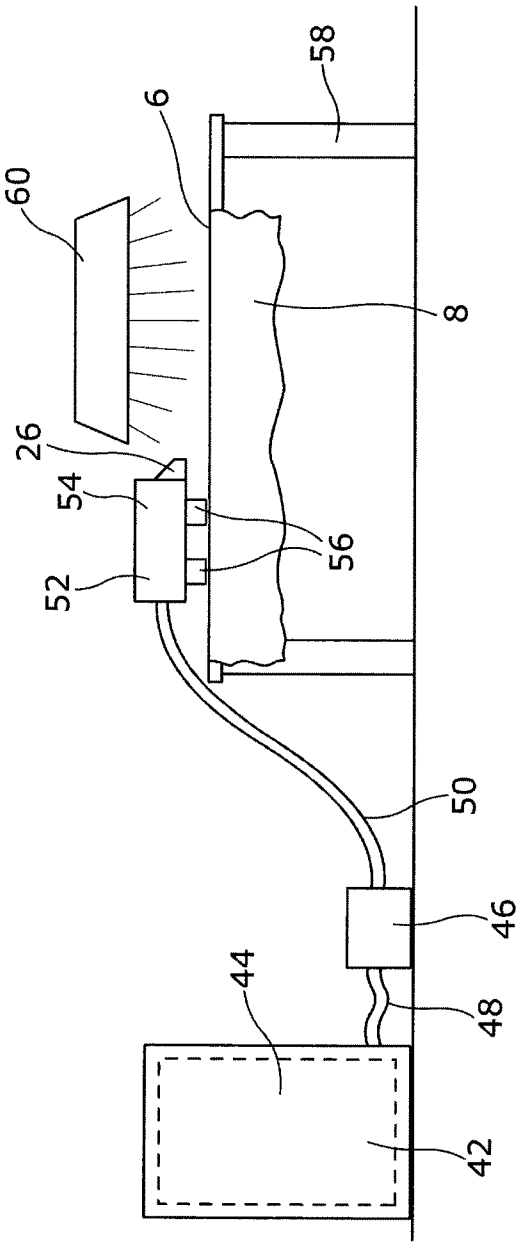


Figure 2

Date Reçue/Date Received 2023-07-17

Figure 3a

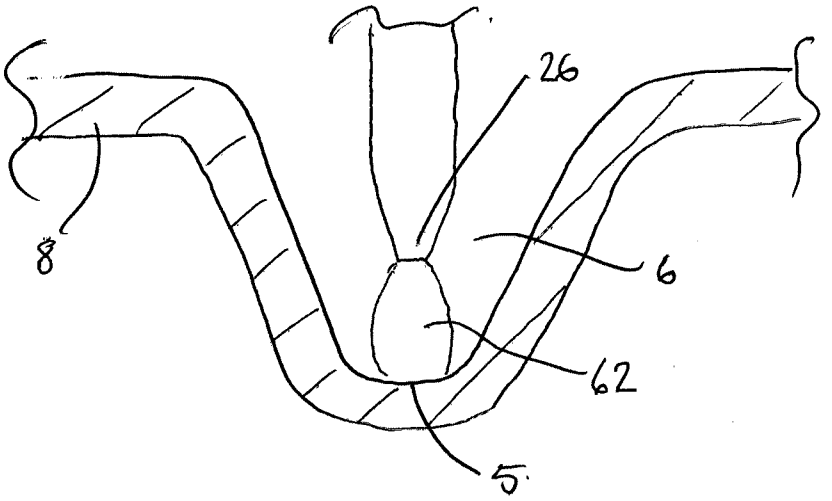
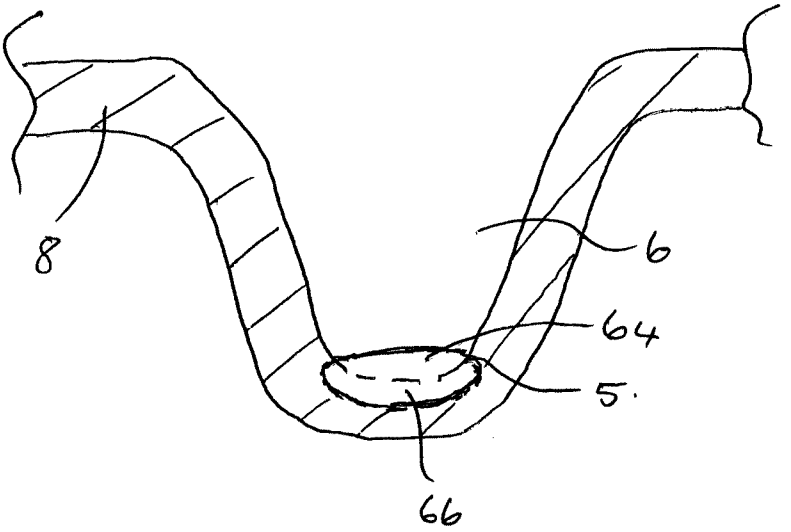


Figure 3b.



Date Reçue/Date Received 2023-07-17