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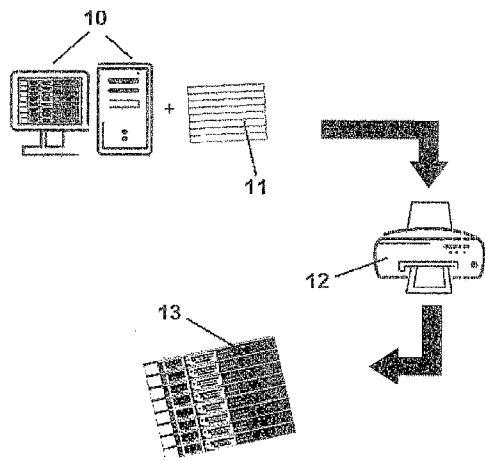
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(57) Abstract: A process for creating an identity band that may go around a wrist is described. A sheet (11) of a resilient material such as paper is used, which has a number of lines of weakness so that it can be separated along these lines to form a number of separate strips. Each of these strips has a weakened area located at one end, which is coated on one side with adhesive able to fix that area to another portion of the strip at the other end encircling a wrist. A software application on a computer (10) is used to create some identity information, and artwork. Then a printer (12) prints on the sheet so as to cover some portion of each of the strips forming the sheet (13). Then the sheet is separated into strips along the lines of weakness, and a strip is fixed around a wrist, to overlap with itself and with the identity information visible, to form an identity band. Preferably the sheet is a standard size, and may separate into (8) strips.

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## Identity Band And Process For Its Production

### TECHNICAL FIELD

The present invention relates to an identification or security band, such as a  
5 wristband, and a process for its production that generally uses a printer operated by a  
software application to create the printed identification features that appear on the band.  
The bands are created by printing multiple bands at a time, onto a sheet of resilient  
material, such as paper, from which the bands are separated, along lines of weakness.

### BACKGROUND ART

10 Identity bands are known, and they are commonly utilised as wristbands. These  
are generally in the form of a strip of strong paper, or similar material, which can be  
overlapped and joined around a person's wrist. Normally the one end of the strip is  
fastened to a portion of the overlapped outer surface of the band, so that the band cannot  
be removed from the person's wrist without destroying the wristband's integrity.

15 Commonly the wrist band is made from a tough coated paper or similar fabric-  
type material, that is robust for normal wearing, but can only be removed by cutting  
with scissors, for example. The band can be joined with adhesive. Often the adhesive is  
a contact-adhesive patch located on the inner surface of the band, at or near one end,  
with a peel-off protective layer that allows the adhesive patch to be fixed to the outer  
20 side of the strip once it encircles a person's wrist.

Also, to prevent the band, once fixed around a wrist, from being opened and  
rejoined, it is usual to create a weakened area under the adhesive patch, which is  
destroyed should any attempt be made to loosen the adhesion once activated. This area  
can be a section of the paper with multiple cuts or slices made through its structure,  
25 which weaken its integrity so that it is weaker than the adhesive strength. Any attempt  
to separate the band will tear apart the weakened end portion of the band to which the  
adhesive was coated, which mostly remains fixed by the adhesive to the outer surface of  
the band. This prevents it from being reattached to another area of the band, as well as  
clearly displaying the damage made to the band's structure.

The wristband normally has material such as text and images printed on it, which is often just on the (outer) side that is visible. The inside surface may be coated to provide a comfortable feeling against the skin, and often may have a smooth moisture resistant coating, to help ensure the integrity of the band from damage by a user's skin moisture. The printed material on the identity or security wristband will often identify the venue into which the wearer is allowed to enter, for instance, and may mention details about the venue and the date of the event. For example, wristbands are worn at entertainment venues to allow ticket holders to enter, and then to leave and re-enter the venue later. These commonly have the date and details of the event printed on the outside surface of the band. Often the artwork on the band is distinctive, to help with identifying and limiting entry to the event only for the people who have the current and correct wristband.

In the past, these wristbands have been created using normal printing techniques, which usually require a large and complex printing press. The bands are produced in large runs, often using a large, continuous roll of paper, and the output then needs to have the weakened area stamped at the correct places to create the identity strips, the adhesive area coated onto the paper, and then the printed paper sheets will need to be cut up or guillotined into appropriate sized strips.

Commonly, the band will be made in two parts, having a support layer that is then bonded with a printed, surface layer.

One alternative process for creating wristbands is described in US Patent No. 5,609,716 (Mosher / Precision Dynamics Corporation), or in International Patent Application Publication No. WO95/20336 (Peterson / Precision Dynamics Corporation), which discloses apparatus for manufacturing identification bracelets that utilises a continuous roll of paper. The roll dispenses as a single strip, which is then modified to become a bracelet. Identification is printed onto the paper, which is dispensed with an adhesive patch, so that it can be sealed around a person's wrist, once it is cut to a suitable length for this. This only discloses the creation of a single bracelet at a time, from a long strip of blank paper. The disadvantage of this approach is that a special printer is required to accept the spool of continuous strip material, and print on

to it, and to ensure the start and finish of each individual strip is accurately registered as the printing takes place.

This approach in many circumstances may be relatively expensive, and is generally not suited to producing small quantities of identity bands at a reasonable cost.

5 It has also been known previously to provide a single sheet of material like a business form that has one or more identification bracelets imposed within a top ply layer, which can be printed on, and which can be peeled away from the sheet for application around a wrist, for example. Some examples of this is US Patent Application Publication No. 2004/0237366 (Chadwick), Canadian Patent Application  
10 No. 2015183 (Ostiguy / Services Graphiques Southam Paragon LES), US Patent Application No. 2004/0113421 (Penuela et al), US Patent 6641048 (Schintz et al), or International Patent Application Publication No. WO02/39412 (Riley). However, these products have some disadvantages. The backing sheet must be disposed of, once each bracelet section is removed. Also, the multi-ply construction of the business form, and  
15 the creation of lines of weakness around each bracelet shape in the top layers of the form, will make this arrangement a relatively expensive product. Many of the examples have irregular arrangements of bracelet shapes, that makes replicating a common image and textual information across a multitude of bracelets difficult, and would require the sheets to be oriented in a printer in a particular way.

20 Much of these previously known products lack any security features that discourage or prevent the bands from being removed without there being some way of making this readily apparent. Ideally, there should be some means provided on an identity band, that discloses to the issuer of the band, if an attempt is made to remove the band during the time it should be kept around the wrist or other extremity of a user.

25 It would therefore be advantageous to provide an improved process of providing identity bands, especially as wristbands, which avoids or ameliorates the disadvantages in previously known wristband production approaches, or which can provide a new and useful alternative to such approaches.

**DISCLOSURE OF THE INVENTION**

The present invention, in one broad form concerns a process for creating an identity band that is adapted to encircle and be retained around a object, which process comprises: (a) providing at least one sheet of resilient material, adapted for printing thereon, the sheet of resilient printable material having a plurality of lines of weakness, which allow the sheet to be separated along the lines so as to form a plurality of separate strips of the material, each of the strips having a weakened area located at or near one end, which area is also coated on one side with adhesive able to fix the area to another portion of the strip, and (b) operating a software application on a computer to create at least one image of some identity information, each image being of a suitable size and shape for printing on at least some area of each of the strips, and then operating a printer controlled by the computer so as to print the image on one or more of the sheets of resilient material so as to cover at least a substantial portion of each of the strips forming the sheet; and (c) separating the sheet into strips along the lines of weakness, wherein (d) each of the strips is able to closely encircle the object, and overlap with itself with the identity information visible, and be fixed to itself by the adhesive, so as to be retained on the object such that after fixing any attempt to reopen the band destroys or damages the weakened area, in order to form an identity band.

Preferably the object is a body extremity of an animal (including a human), and most preferably it is the wrist or ankle of a human.

It is preferred that the lines of weakness may be perforations. Also, it is preferred that in step (a) the sheet may be separated manually into the strips. The resilient material may be paper. The sheet may be a standard size, such as the sheet being "A4", "A3" or "letter" sized.

Preferably, the sheet may contain a plurality of lines of weakness substantially equally spaced apart and extending parallel to the longer sides of the sheet. In one preferred form the sheet of paper may have sufficient lines of weakness to provide eight or ten of the strips. The sheet may be a continuous series of sheets, separated by lines of weakness from each other. In this case, the continuous series of sheets may be arranged as a roll, or as a fan-fold stack. The sheet may alternatively be a continuous series of sheets, which can be subsequently cut into individual sheets. As another alternative, the

sheet additionally may have a margin area around its outer edges, separated by lines of weakness from the remaining area that contains the strips.

Preferably, the identity information may comprise text and graphics. Ideally, the image may include a bar code or serial number. It is also preferred that a substantially similar image may be printed on each of the strips of the sheet. In this case, at least one portion of each image for each strip may be printed with unique information. If so, then the unique information may include a bar code or serial number unique for each strip. As another option, a warning message may be printed on each strip, to warn a user not to remove the band. This may possibly be the words "DO NOT REMOVE", or the like, being printed on each strip. It is preferred that the adhesive may be protected by means to prevent adhesion occurring until activation. In this case, the adhesive may be protected by a removable barrier, which activates adhesion once it is removed. Ideally, the adhesive may be contact adhesive, and the barrier may be a waxed paper patch, which is peeled off to allow adhesion.

It is preferred that the software application may be provided on a media able to be installed and then run on the computer. Alternatively, the software application may be provided over the internet, and downloaded and then run on the computer.

As one preferred option, one side of the sheet may be coated with a strengthening layer. As another option, one side of the sheet may be coated with a moisture resistant or proofing layer. In this situation, the one side of the sheet that is coated may be pre-printed with text or images or logos or other similar material. It is preferred that the sheet may be coated with a layer that is optimised to be printed upon. Preferably, the sheet may be printed in one colour / multiple colours. The sheet may be printed on both sides at once.

As one preferred option, the weakened area may be cut with a pattern of overlapping slits or cuts. It is preferred that a strip of material may have at least one further line of weakness that allows at least one section of the strip to be removed from the strip, before or after affixing around the object. In this situation then some identity information may also be printed onto the at least one section to be removed. As another alternative, at least one of the strips may contain or incorporate RFID circuitry or device.

As another alternative, the band is a wristband that operates as a ticket to a venue or event. As another alternative, the band may be a wristband that operates as a security monitor.

5 The invention in another embodiment, concerns a sheet of resilient printable material, for creating a plurality of identity bands each of which is adapted to encircle and be retained around a object, which sheet:- having a plurality of lines of weakness, which allow the sheet to be separated along the lines so as to form a plurality of separate strips of the material, each of the strips having a weakened area located at or near one end, which area is also coated on one side with adhesive able to fix the area to another  
10 portion of the strip, and wherein each of the strips is able to closely encircle the object, and overlap with itself, and be fixed to itself by the adhesive, so as to be retained on the object such that after fixing, any attempt to reopen the band destroys or damages the weakened area, in order to form an identity band. The preferred and optional features of this aspect of the invention are as described above for the process.

15 Another embodiment of the invention relates to a system for creating an identity band that is adapted to encircle and be retained around an object, which system comprises: (a) at least one sheet of resilient material, adapted for printing thereon, the sheet of resilient printable material having a plurality of lines of weakness, which allows the sheet to be separated along the lines so as to form a plurality of separate  
20 strips of the material, each of the strips having a weakened area located at or near one end, which area is also coated on one side with adhesive able to fix the area to another portion of the strip, and (b) a software application operating on a computer that creates at least one image of some identity information, each image being of a suitable size and shape for printing on at least some area of a strip, and then operating a printer controlled  
25 by the computer to print the image on one or more of the sheets of resilient material, to cover at least a substantial portion of each of the strips forming the sheet; and (c) whereby the sheet can be separated into strips along the lines of weakness, and wherein (d) each of the strips is able to closely encircle the object, and overlap with itself with the identity information visible, and be fixed to itself by the adhesive, so as to be  
30 retained on the object such that after fixing any attempt to reopen the band destroys or damages the weakened area, in order to form an identity band. The preferred and optional features of this aspect are as described above for the process.

## BRIEF DESCRIPTION OF DRAWINGS

The invention is now discussed with reference to drawings, where:

Figure 1 shows a generic wristband;

5 Figure 2 shows a schematic of the production process according to the current invention;

Figure 3 shows a sheet of identification bands according to the invention, with identical artwork, but with areas of unique information like a barcode;

Figure 4 displays a sheet of identification bands according to the invention that has unique artwork;

10 Figure 5 shows a screen from an example of a printing application;

Figure 6 shows another screen;

Figure 7 shows another screen; and

Figure 8 shows yet another screen, from an application for printing bands.

## BEST MODES FOR CARRYING OUT INVENTION

15 A typical security wristband is shown in Figure 1. The band (1) comprises a strip of paper (2), or paper equivalent, having a top or outer surface (shown) and a bottom or inner surface (not shown). The top surface normally has printed matter displayed on it; which commonly consists of art work and advertising material, which is shown in more detail in Figures 3 and 4 and which is discussed in more detail below. However, many  
20 bands commonly have a warning message (3), such as "Void if removed", to discourage users from interfering with the band once attached around their wrist. The band (1) is of a length to encircle a person's wrist, and a width to retain sufficient strength to not be tearable by accident, and to provide enough space to include printed matter.

One end of the band has a weakened area (4) and on the bottom or inner side a  
25 patch of contact adhesive is applied to cover this weakened area. Normally a protective covering patch of waxed paper, for example, will cover the contact adhesive patch. Once the protective patch is removed, the band can be wrapped around a person's wrist, normally starting from the end opposite the adhesive, and overlapping with the outer side of the band. Then the adhesive patch is secured to a portion on the band, to  
30 normally produce a tight enough fit so that the band cannot be slipped over the person's

hand, and the band is retained around the wrist, until the person removes it, normally by cutting it with scissors.

The paper is often a strong paper, to prevent removal by accident. The paper may have a reinforcement layer, often of plastic, on the inner surface. This plastic layer acts as a barrier to prevent the person's sweat from weakening the paper, or of damaging the printed artwork, and making it illegible.

The band in Figure 1 is a band generally produced by known techniques, which will normally involve printing large numbers of the artwork for the bands onto a continuous roll of paper. The paper is then guillotined, then sliced at the appropriate places to create a weakened area, and coated over generally the same area with contact adhesive on the underside and covered with a peelable protective cover of thin waxed paper, for example. These steps can occur in any appropriate order.

In contrast, Figure 2 shows a schematic of the present invention. The artwork is generally designed on a computer (10). Preferably this is done using a specific software application that will take into consideration the dimensions and arrangement of the sheet of paper (11) which will be printed and then divided to provide wrist bands.

The paper sheet (11) is inserted into a suitable printer (12), which is controlled by the application on the computer (10). The printer then creates the artwork onto the top or outer surface of the blank sheet (11). The printer will produce the sheet of identification bands (13).

More detail is shown in Figure 3 of the final sheet of printed and personalised identity bands (13). There can be any appropriate number of bands provided on the sheet, each of which is separated by a line of weakness. The example shown in Figure 3 has eight individual bands (14), which are separated by seven lines of weakness (15). Any type of weakness may be utilised, but it is preferred that the line is perforated, or a shallow cut, so that the bands can be easily separated from each other manually.

A section (16) at one end of each band has been prepared, by previously slicing a pattern in them (not shown) such as of the appearance shown in Figure 1. A contact adhesive is coated on the other side, and protected with a peel-off waxed cover (not

shown). A message (17) such as “do not remove” as shown in this example, may be pre-printed on the sheet, but is preferably included in the artwork template.

In general, the artwork is to a large extent common to a number of bands, preferably all the bands on each sheet. But the software application that controls the printing may insert some unique material. For example this may be a unique identifying barcode (19) or unique text (20), in this situation, the names of the people who will be wearing the bands.

In general, the invention concerns a process for creating an identity band, of the type that encircles an object, and can be retained there. Preferably the object is a body extremity of an animal, and most preferably it can encircle the wrist of a person. The object is ideally something with a neck or narrow portion which can be secured by the identity band, which prevents the band from being removed without breaking its adhesive seal. But in some situations, the band may be used to go around any object and it can then rely on friction to hold it in place. It can be held more securely by overlapping the band tightly, and fastening it together without any slack in the band. This is the preferred approach when attaching the band to an inanimate object, but conversely, some slack in the band is preferred when used with a living thing or person, so as not to cause bruising, pain or damage.

For example the band may be used to identify objects in warehouses, shops, or on stalls, such as with furniture items, luggage items, or computers, for instance. Ideally, it may be fastened around some portion of the article through a hole, such as around the arm of a chair, or handle on some luggage, so that it can only be removed by cutting it open. However, it may be wrapped around a notebook computer, or around the entire body of an item of luggage, as other examples, to function as identification, and also to hold the notebook or luggage closed, or to indicate, by its absence, that someone has opened the object, and perhaps tampered with it.

Preferably, the band is used with animals, and especially with people. The band may then be fixed around an extremity, such as around the collar of a pet dog, or of livestock, or most preferably, with people, around a wrist or ankle. In this case, it is normally fastened loose enough not to cause discomfort, but not such as to allow it to be removed without breaking its seal.

The invention involves making the identity bands from a sheet of resilient material, which can have images printed on the surface of the sheet. The images normally comprise text, words, logos, artwork, and the like matter, printed on one surface of the band. The images act as the identifying or security aspect of these bands.

5 For example, the bands may be printed with the name, address and contact details, for the owner of livestock, if the bands are used to go around the neck of the livestock. Unique information may be included as a part of the image, such as a unique serial number or bar code, for instance.

The sheet to be printed upon is preferably a resilient paper, or paper substitute.

10 However other substances may be used, such as different plastics, metallised plastics, or even metal itself, provided these can be printed on, using a printer. Printers are normally optimised for using paper. Other paper substitutes may also be suitable, such as “Tyvek” (which is a high density polyethylene from the Dupont company) or “Teslin” (which is a strong synthetic printing media, from PPG Industries). Another paper

15 substitute is available from the Valéron Company. With other plastics, the printer may need to have special inks or toners used. As used herein, the term “paper” includes paper equivalent materials, including those mentioned above.

The resilient material or paper may be strengthened by being made from multiple layers that are then bonded together. For example a support layer that may consist of

20 two or more cross-laminated layers optimised for strength and resilience, may have a surface layer bonded to it, the surface layer being optimised for being printed upon. In this situation, the surface layer may not extend across the full length of the strip, but not cover the end section with the weakened area and adhesive.

The sheet may be of any colour, size and thickness. Unusual colours, especially

25 bright colours, or a combination of colours, may be utilised on a single sheet, which will help with creating a visible and easily identifiable identification band. However, as one preferred form, the sheet is of white paper or paper equivalent, and the decoration and identifying matter is added by printing on each sheet.

Preferably, the sheet is of a standard size, which is especially useful to allow the

30 printing by inexpensive and commonly available printers. The sheet may be of “A4” size, “A3” size, “foolscap” size, the US “letter” size, or other standard sizes.

The sheets from which the bands are made have a number of lines of weakness provided in them, which will allow each sheet to be divided into strips along the lines, so that the strips can become the identity bands. The lines of weakness may be anything which allows the sheet to be easily broken apart along these lines. This may preferably  
5 be a line of perforations, or lines of imperfect or surface cuts in the paper or similar material. Other means of providing weakness, such as folds, or strips of a weaker material may be utilised, and combinations of such weakness means can be used.

It may also be useful to indicate where the lines of weakness are located on the sheet, by printing an indicator on the sheet, in the form of a dotted or faint line for  
10 example, or by other means, such as using symbols, like a pair of scissors for instance, or using message, like "Break here". It is preferred that the lines of weakness be suitable for the easy separation of the strips using manual force. However, in some situations, it may be preferred to use implements like scissors or a guillotine to help or accomplish the separation into strips.

15 The sheet is designed to have a number of lines of weakness, to separate the whole sheet into a number of strips. The lines, in one preferred form, run parallel with the longer sides of the sheet, although other arrangements are also possible. The alternative of running parallel to the shorter sides of the sheet may be useful for creating identity bands to go around the wrists of children for example. The number of strips  
20 arranged on each sheet depends on the preferred width for each strip. There should be sufficient room on the strip to display a reasonable amount of printing, but too wide a strip will be uncomfortable, especially around the wrist of a person. Too narrow a strip will weaken it, and allow it to be accidentally torn open for instance. A suitable width for each strip is usually from about 10 to 50 millimetres, and most preferably about 19  
25 millimetres or 25 millimetres or 35 millimetres wide, with 25mm being preferred in many situations. Narrower strips may be preferred with stronger types of paper.

There can be a standard number of strips provided for each sheet, and an "A4" sheet may contain eight strips, having seven lines of weakness separating them, and running parallel to the longer sides of the sheet. Another popular option is to use "A3"  
30 size paper having 10 strips. The lines are preferably arranged symmetrically, so that each band on a sheet is of an equal size and shape.

As another option, the sheets may be in the form of a continuous roll, with a line of weakness separating each sheet in the roll. The sheets in the roll may each be a standard size, such as A4. In this situation, a special printer may be required, to allow the roll of A4 sized paper to be fed through the printing area, and outputting the sheets  
5 of the printed strips on to another roll. Alternatively, the continuous paper may start from a fan-fold or concertina (ie, zig-zag) arrangement of continuous sheets, and forming a similar concertina type arrangement of sheets after the printing step. Or else a mixture of a roll and fan-fold arrangements may be used. The output is then able to be split into individual sheets, or sections of individual sheets, by splitting them apart along  
10 the lines of weakness.

As another alternative, the sheets may be in the form of a continuous roll, which can then be cut, normally after the printing step, into individual sheets. In this situation, the roll may be passed through the printer, which creates the artwork on the eight strips (or however many strips make up a sheet), and feeds into another roll. The sheets can  
15 then be cut or guillotined into individual sheets, later.

As another option, there may be a margin, or trim edge, around the area arranged for printing on and splitting into strips. A margin of about 5 millimetres wide would be suitable, although other widths may be used. This has advantages with some printers, which may be unable to print right up to the edges of the sheet, and the margins may  
20 also contain positioning guides or sprocket holes for guiding the sheet into some printers. Ideally, the margins are also separated from the central part of the sheet by lines of weakness, allowing the margin to easily be stripped away, after the printing is completed. Otherwise the margin areas may be trimmed off using scissors, or the like.

The lines of weakness may be straight, and run in parallel with each other.  
25 However, other arrangements may be used, so long as strips of material are produced able to function as identity bands. For example, different shapes may be used for the sides of each strip, such as curves, waves, zig-zags and the like. If non-straight shapes for the sides of each strip are used, then interlocking shapes are preferred, to avoid wastage of the paper. Shapes that are extreme should normally be avoided, as these may  
30 weaken the band. If non-straight lines are used, then a gentle "sine" type curve, is one preferred form.

As mentioned above, and shown in Figure 1 in particular, the sheet is arranged so that an area of weakness (4), which is also known as a “security cut”, is positioned near the end of each strip (2), once the sheet is separated into strips. The star (“\*”) like pattern of slashes, or lacerations, in the paper, as shown in the Figure is a preferred design for this area. However other arrangements may also be used. A physical or chemical treatment of the paper may be used instead of arranging cuts in the paper so as to create the weakness.

A coating of some adhesive is positioned on the side of the strip which will be on the inside, when the strip is fixed around an object. Any suitable adhesive may be used, but preferably a hot melt, rubber based, contact-type adhesive is utilised. The contact adhesive, would have a peel off waxed paper protective layer, which will allow the adhesive to work, when it has been removed. The protective layer should be thin, or otherwise arranged, so that the passage of the sheet through the printer is not affected adversely.

The paper can be coated with layers that strengthen it, or that create a moisture proof, or resistance, barrier. The paper may be multilayered, often cross-layered to increase their strength. Generally, additional layers can be applied to the inside surface of the band, when it is worn. A smooth plastic coating adds to the comfort of wearing the band. As another alternative, a layer may be provided to the outside surface, to assist with the printing. Some printers perform best with specially prepared surfaces adapted to operate with proprietary printers or printing ink cartridges, and such surface layers may be bonded to part or all of the sheet’s surface that is destined to become the band’s outer surface.

The images may be printed on one side only, or on both sides of the sheet. Some printers are duplex printers, able to print on each side simultaneously. Alternatively, the sheet may be fed through two printers in sequence, that each print on alternate sides. Or the sheet may be fed through the printer a second time, after reversing it, to print on the reverse side. Normally, the outer side of the band will contain identity images. The inner side may have more general information, and be less detailed. For example “terms and conditions” may be printed on the inner side. Product logos or even advertising may

be printed on the inner side, which may serve to reduce any likelihood of counterfeiting the band.

The weakness areas and adhesive patches are created in each sheet, with the lines of weakness. A consumer may purchase these sheets from shops, and prepare the identity bands themselves. Ideally, they would use a home or personal computer, and its attached printer. Computing and printing equipment are available in many homes and businesses, and there are many advantages to using such equipment. Alternatively, existing printers, such as those used by business to provide sales docket, or information to customers may be used to print on the sheets.

The sheets may be manufactured in this situation as blank sheets, and all the printed images are later added by the user.

Alternatively, the sheets may be manufactured with some images on them already, and the end user adds their own printing and images to these. For example, sheets may be provided to airlines to use with the airlines names and contact details already provided on the otherwise blank sheets. The airlines may provide a sheet to their customers, who add their names, and flight details to the sheets at home before they take a flight, to go on all their items of personal and carry-on luggage, to help identify it if it gets lost. Or else, the airline may give their passengers a sheet they print up themselves when the passenger checks in, to tear off any number of strips to go around their luggage items, drink bottles and the like, or even on their children's wrists; whatever they wish to use the identifications bands for.

As a further alternative, the sheet may be designed so that one or more of the strips of material that constitute the sheet, has at least one further line of weakness that allows at least one section of the strip to be removed from the strip, before or after affixing around an object. In other words, one or more removable tabs or stubs may be included into a strip. An end section of the strip, preferably the one opposite the adhesive, may have additional perforations to allow stubs to be torn off the strip. As another alternative, one side of the strip may have one or more perforated tabs, which may project from the remainder of the strip, or be internal to it, which can be removed later. As another alternative, an end portion may have diagonal lines to achieve the same

result. As yet other alternatives, perforations or other weakness lines, may allow interior oval areas, or suchlike to be removed.

In this situation, preferably some identity information is also printed onto these sections that are able to be removed. For example a strip may have two or so portions or tabs, able to be removed along perforations at its end. In each area, a barcode and serial number is printed, that matches the barcode also printed on the strip, to be an identity element. One of these tabs can be removed when the strip is fixed around a person's wrist, and attached to other paperwork. The second of these tabs can likewise be removed from when the strip is removed from the wrist, again for attachment to paperwork.

This arrangement has utility with wristbands used with luggage movements, or with patients in hospitals, for example. In hospitals, a tab can be removed when the patient is entered into a hospital system and again when the patient is discharged. The sheet with tabs can also be used with prescribing medicine, or when some regular but important event must take place. If a patient must take a regime of medicine, such as a series of 5 tablets, then 5 tabs can be included, and the patient or a nurse can remove one tab each time the medicine is administered to a patient.

The tab may not need to have identity information included on it. On the other hand, this may be useful in circumstances such as where a person taking a complex set of different medicine may write on each tab details of the medicine, and again tear off a tab each time one is taken, or else merely count the tabs removed and remaining to determine what medicine is to be taken.

The sheet of strips, divided by lines of weakness, may include different layouts of strips with additional tabs. For instance, a single sheet may contain six strips, two which lack any tabs, two strips with four tabs along one side, and two strips with eight tabs along each side. Users may print out a sheet, and then utilise the arrangements that suits their purpose, and discard those that may not.

As a further alternative, one or more of the strips may contain or incorporate other identity means, such as an RFID (radio frequency identity) circuitry or device. These devices are already known to be incorporated in identity bands, and the same

arrangement may be used with the present invention. But the other identity means, such as the RFID devices are incorporated in the sheet, preferably one such means in each area of the sheet that corresponds with each strip.

In order to print the identification matter on the bands, a software application on a computer is used. This may be any application that can control a printer and output information on to paper in the printer. For example, existing office or word processing software, such as Microsoft "Office" , "Word" or "Works" may be used, or any of the image creation and processing applications, such as "Photoshop", "Paint" or the like. With these applications, some care needs to be taken to create a template or image that can print on each of the strip regions in the special paper.

Therefore it is preferred to provide users with some assistance, in the form of templates or a specifically designed application, to enable an easy and simple method of handling the printing.

In Figures 5 to 8, examples of some screens for printing bands are provided. In Figure 5, an initial screen is displayed, where a user may select from among a number of previously created templates, or wristband designs. These designs can be created by the users, and saved for later re-use of further editing, or provided to the user to be starting designs. In Figure 6, it is shown how a user may select areas on the generic wristband image by clicking there with a mouse, and then edit the contents or appearance of the selected area, using functions provided on the right-hand side of the computer screen. For instance, in the Figure, the red dotted line indicates where the text, colours, or font size can be changed, using the functions provided on the right, once the user selects a text box or picture box in the actual design (shown by the arrow). Each time a different selection is made on the design, the right hand side options can change in line with the object selected.

In Figure 7, when a user finishes designing a band, then a printer can be selected by clicking on the "printer" button at the top of the window, to either print preview or print directly to a printer. The user can then be asked now many bands they wish to print, and then select the printer. Figure 8, shows the band design using the "print preview" function, where an entire sheet of bands is displayed.

A separate software application may be provided to manage the printing step, or a “plug-in” application that operates with other applications may be provided. Some applications, like Microsoft “Word” have a scripting language, and/or templates, that can be used, and provided, in order to automate the printing process.

5 In one preferred form, an application or template, is provided, that automates the printing. It can allow a user to create the artwork for a single strip, which will become a band. It can provide a number of models to copy, which can be personalised or edited further to include the specifics of each event, or situation requiring the security band. Once a single strip’s artwork is created, the application can then copy this material to  
10 cover the entire sheet. For example, if a sheet of eight strips is provided, a user will create the artwork for a single strip, and when they wish to produce the bands, the application will copy the artwork another seven times, to create a single piece of imagery of the size of the whole sheet, but containing eight copies of the artwork, each positioned to print accurately on each strip region on the sheet. The application or  
15 template may take the margins around the sheet into account, if there are any, and also leave a free area on sections of each strip on the sheet, such as over the weakened area, or along the perforations.

The application may allow the printing of less than a complete sheet. As another option, the software application may keep track of which bands have been printed, in a  
20 sheet, to allow for the printing on unused bands in the sheet, at a later date.

The application may also include some specific text or images for each single strip. Because bar codes are commonly used to identify objects, the application may include a simple means of adding this to each strip, perhaps as a variable barcode. There may be one barcode for each group of strips, so that all the strips for entry into a venue  
25 on a particular night share the same code, or alternatively, or in addition, the application may allocate a unique barcode to each separate strip. A human-readable serial number may be used instead of, or in addition to, the barcode. The barcodes may follow any of the barcode standards.

Also, the application may have means to personalise each strip, so that each sheet  
30 of eight strips contains one or more areas where individualised or variable information may be added. The variable information may be entered piece by piece by the user, or

preferably, a database, table or list may be requested or created separately, and each row in that table automatically added to each group of eight on each sheet. Ideally the application can keep track of the groups of eight (or however many are used per sheet), so that re-printing any damaged sheet is possible without much extra effort. The wristband may be personalised by adding information that may be selected from randomly generated, or consecutively numbered, barcodes, series of numbers, names, or any other variable information. If a database or table is used to store the variable data, then it may be in any format, such as, Microsoft "Access" or "Excel" or "Word" formats, or in the form of "csv" or "txt" files, for instance.

The example in Figure 3 shows a sheet with eight identical strips, but with some variable information obtained from a table, (or perhaps individually typed in), which represents the names of students in a school classroom, who may be on an excursion, for instance. A unique barcode, with readable serial number, is printed on each strip, along with each student's name. Some standard artwork, such as the school's contact details, class and teacher information. Some general imagery such as the text, the logos and attractive and distinctive material is common to all the strips in the sheet. The next sheet fed into the printer will continue with other members in the class. The example in Figure 4 shows individual strips created for a single sheet, as another alternative.

The software application, in whatever form such as templates etc, may be provided in a disk (CD or DVD), together with a supply of the sheets for making identity bands. The disk may include an application which can assist with the installation procedure onto a PC. Or else, the software or templates may be downloaded from the internet, or provided in other ways. Preferably, the software application, a supply of the sheets for making bands, and instructions for their use, are provided in a kit form. Refill supplies of the sheets may also be provided separately.

Any suitable printer may be used, such as ink-jet, matrix, laser, thermal type, or other printers. The printer may print in just one colour, such as black, or preferably it may print in colour, with any number of colours. A single colour for the printing may be appropriate in some situations, such as for hospitals, where the band may be plain white, and printed just with the patient's name, for example. Multi-coloured printing will be most suited for bands to be used with entry into venues and events. Sheet feeders may

be used to feed the sheets into the printer, and the printed paper may be collected in trays. If continuous paper is used, with lines of weakness between sheets, then these can be fed and/or collected on rolls or with trays with a fan-fold arrangement.

5 The sheet may be passed through the same printer, or more than one printer, in multiple passes, to increase the colours, with different colours applied on each pass. The system may also utilise large, or commercial printers. Some or all of the printing may be done using photocopiers, or similar equipment; copying from an original template, on to the sheets.

10 The identity bands of the invention may be used in a large variety of situations. They may operate as tickets to venues or events, as wristbands for people attending. They may operate to identify children when they are on school excursions, or with animals, for instance. They may also operate as a security feature, and people in high security locations, such as in airports may be given wristbands at check-in, to wear until they board their planes. They may be used in hospitals and other large institutions to  
15 provide identity information about the patients or clients.

The identity bands may be useful to manage luggage, as the strips are ideally shaped to fit around luggage handles and straps.

## **INDUSTRIAL APPLICABILITY**

20 An identification or security band, such as a wristband, is able to be used for security and identification situations, and a process for its production that generally uses a printer operated by a software application to create the printed identification features that appear on the band, is of benefit in this industry.

25 It will be apparent that obvious variations or modifications may be made in accordance with the spirit of the invention that are intended to be part of the invention, and any such obvious variations or modification are therefore within the scope of the invention.

**CLAIMS:**

1. A process for creating an identity band that is adapted to encircle and be retained around a object, which process comprises:
  - (a) providing at least one sheet of resilient material, adapted for printing thereon, said sheet of resilient printable material having a plurality of lines of weakness, which allow said sheet to be separated along said lines so as to form a plurality of separate strips of said material, each of said strips having a weakened area located at or near one end, which area is also coated on one side with adhesive able to fix said area to another portion of said strip, and
  - (b) operating a software application on a computer to create at least one image of some identity information, each said image being of a suitable size and shape for printing on at least some area of each said strip, and then operating a printer controlled by said computer so as to print said image on one or more of said sheets of resilient material so as to cover at least a substantial portion of each of said strips forming said sheet; and
  - (c) separating said sheet into strips along said lines of weakness, wherein
  - (d) each of said strips is able to closely encircle said object, and overlap with itself with said identity information visible, and be fixed to itself by said adhesive, so as to be retained on said object such that after fixing any attempt to reopen said band destroys or damages said weakened area, in order to form an identity band.
2. The process of claim 1, wherein said object is a body extremity of an animal (including a human).
3. The process of claim 2, wherein said body extremity is the wrist or ankle of a human.
4. The process of claim 1, wherein said lines of weakness are perforations.
5. The process of claim 1, wherein in step (a) said sheet may be separated manually into said strips.
6. The process of claim 1, wherein said resilient material is paper.

7. The system of claim 1, wherein said sheet is a standard size.
8. The process of claim 7, wherein said sheet is "A4", "A3" or "letter" sized.
9. The process of claim 1, wherein said sheet contains a plurality of lines of weakness substantially equally spaced apart and extending parallel to the longer sides of said sheet.
10. The process of claim 9, wherein said sheet of paper has sufficient lines of weakness to provide eight or ten of said strips.
11. The process of claim 1, wherein said sheet is a continuous series of sheets, separated by said lines of weakness from each other.
12. The process of claim 11, wherein said continuous series of sheets is arranged as a roll, or as a fan-fold stack.
13. The process of claim 1, wherein said sheet is a continuous series of sheets, which can be subsequently cut into individual sheets.
14. The process of claim 1, wherein said sheet additionally has a margin area around its outer edges, separated by lines of weakness from the remaining area that contains said strips.
15. The process of claim 1, wherein said identity information comprises text and graphics.
16. The process of claim 1, in which a portion of said image includes a bar code or serial number.
17. The process of claim 1 in which a substantially similar image is printed on each of said strips of said sheet.
18. The process of claim 17, in which at least one portion of each said image for each strip is printed with unique information.
19. The process of claim 18, wherein said unique information includes a bar code or serial number unique for each strip.

20. The process of claim 1, wherein a warning message is printed on each strip, to warn a user not to remove the band.
21. The process of claim 20, where the words "DO NOT REMOVE", or the like, are printed on each said strip.
22. The process of claim 1, wherein said adhesive is protected by means to prevent adhesion occurring until activation.
23. The process of claim 20, wherein said adhesive is protected by a removable barrier, which activates adhesion once it is removed.
24. The process of claim 23, wherein said adhesive is contact adhesive, and said barrier is a waxed paper patch, which is peeled off to allow adhesion.
25. The process of claim 1, where said software application is provided on a media able to be installed and then run on said computer.
26. The process of claim 1, where said software application is provided over the internet, and downloaded and then run on said computer.
27. The process of claim 1, where one side of said sheet is coated with a strengthening layer.
28. The process of claim 1, where one side of said sheet is coated with a moisture resistant or proofing layer.
29. The process of claim 27 or 28, where said one side of said sheet that is coated is pre-printed with text or images or logos or other similar material.
30. The process of claim 1, where one side of said sheet is coated with a layer that is optimised to be printed upon.
31. The process of claim 1, where said sheet is printed in one colour or in multiple colours.
32. The process of claim 1, where said sheet is printed on both sides at once.

33. The process of claim 1, where said weakened area is cut with a pattern of overlapping slits or cuts.
34. The process of claim 1, wherein a strip of material has at least one further line of weakness that allows at least one section of said strip to be removed from said strip, before or after affixing around said object.
35. The process of claim 34, wherein some identity information is also printed onto said at least one section to be removed.
36. The process of claim 1, wherein at least one of said strips contains or incorporates RFID circuitry or device.
37. The process of claim 1, where said band is a wristband that operates as a ticket to a venue or event.
38. The process of claim 1, where said band is a wristband that operates as a security monitor.
39. A sheet of resilient printable material, for creating a plurality of identity bands each of which is adapted to encircle and be retained around a object, which sheet:-  
having a plurality of lines of weakness, which allow said sheet to be separated along said lines so as to form a plurality of separate strips of said material ,  
each of said strips having a weakened area located at or near one end, which area is also coated on one side with adhesive able to fix said area to another portion of said strip, and wherein  
each of said strips is able to closely encircle said object, and overlap with itself, and be fixed to itself by said adhesive, so as to be retained on said object such that after fixing, any attempt to reopen the band destroys or damages the weakened area, in order to form an identity band.
40. The sheet of claim 39, wherein said lines of weakness are perforations.
41. The sheet of claim 39, wherein said resilient material is paper.
42. The sheet of claim 39, wherein said sheet is a standard size.

43. The sheet of claim 42, wherein said sheet is "A4", "A3", or "letter" sized.
44. The sheet of claim 39, wherein said sheet contains a plurality of lines of weakness substantially equally spaced apart and extending parallel to the longer sides of said sheet.
45. The sheet of claim 44, wherein said sheet of paper has sufficient lines of weakness to provide eight or ten of said strips.
46. The sheet of claim 39, wherein said sheet is a continuous series of sheets, separated by lines of weakness from each other.
47. The sheet of claim 39, wherein said sheet additionally has a margin area around its outer edges, separated by lines of weakness from the remaining area that contains said strips.
48. A system for creating an identity band that is adapted to encircle and be retained around a object, which system comprises: (a) at least one sheet of resilient material, adapted for printing thereon, said sheet of resilient printable material having a plurality of lines of weakness, which allow said sheet to be separated along said lines so as to form a plurality of separate strips of said material, each of said strips having a weakened area located at or near one end, which area is also coated on one side with adhesive able to fix said area to another portion of said strip, and (b) a software application operating on a computer that creates at least one image of some identity information, each said image being of a suitable size and shape for printing on at least some area of a strip, and then operating a printer controlled by said computer to print said image on one or more of said sheets of resilient material, to cover at least a substantial portion of each of said strips forming said sheet; and (c) whereby said sheet can be separated into strips along said lines of weakness, and wherein (d) each of said strips is able to closely encircle said object, and overlap with itself with said identity information visible, and be fixed to itself by said adhesive, so as to be retained on said object such that after fixing, any attempt to reopen the band destroys or damages the weakened area, in order to form an identity band.



Figure 1

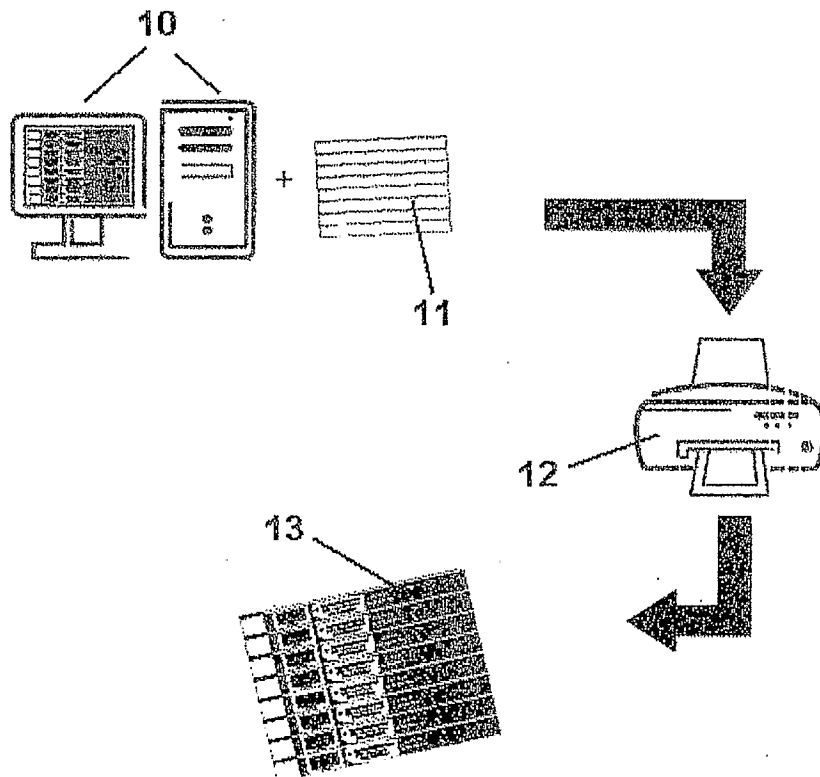


Figure 2

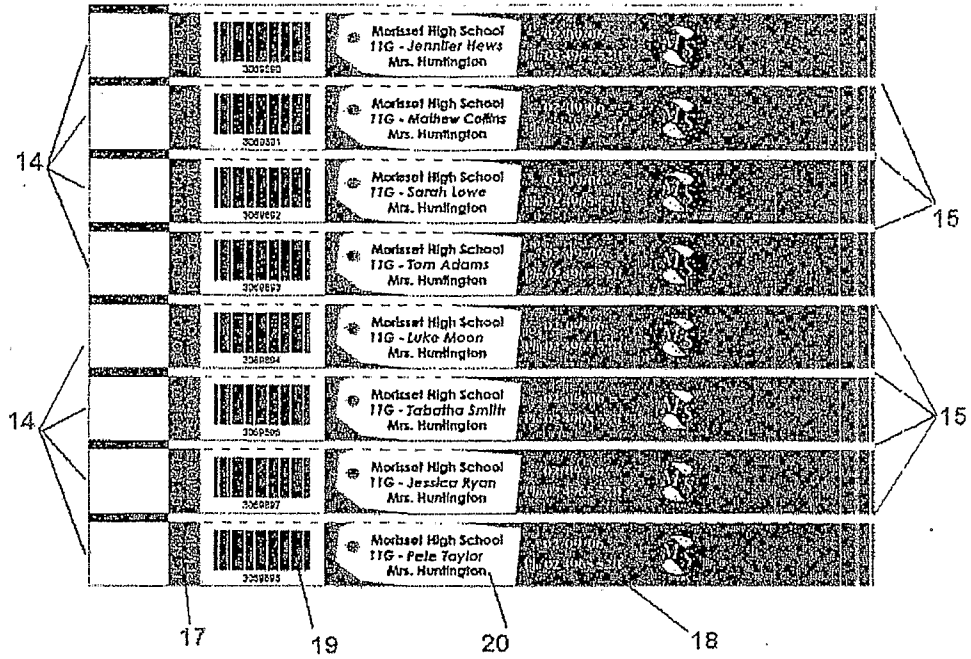


Figure 3



Figure 4



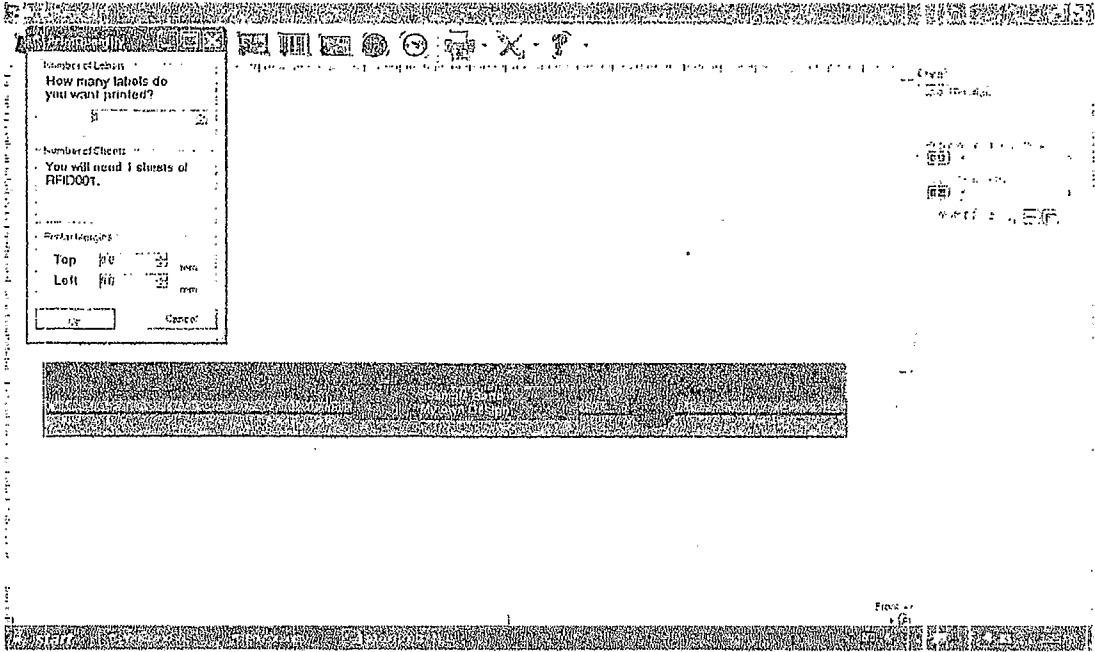


Figure 7

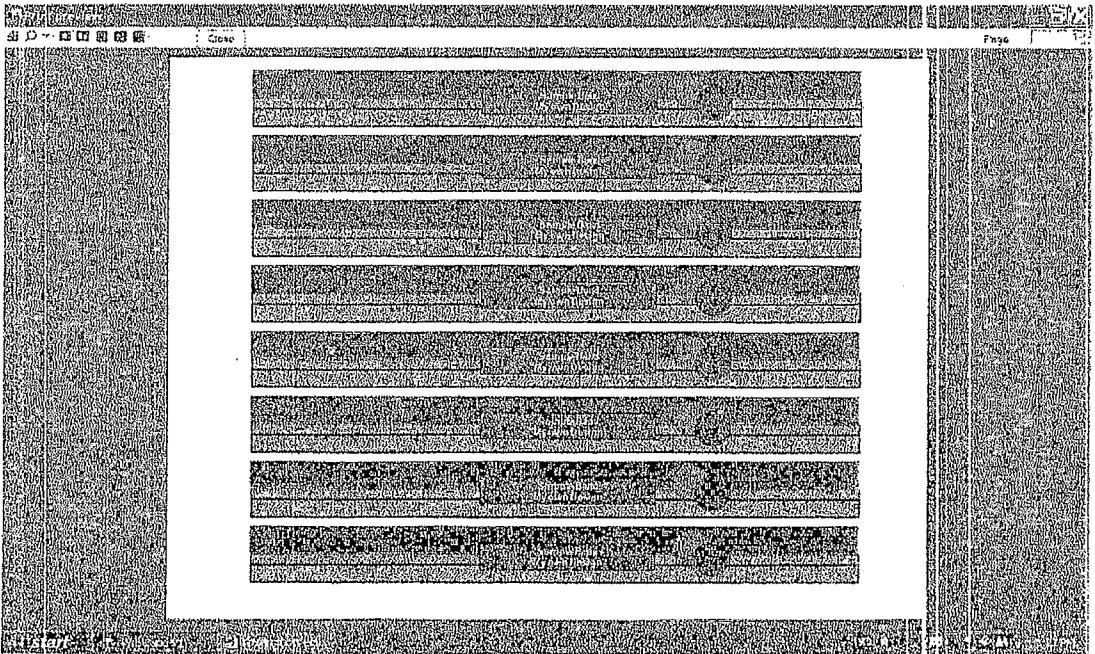


Figure 8

## INTERNATIONAL SEARCH REPORT

International application No.  
PCT/AU2007/001556

<b>A. CLASSIFICATION OF SUBJECT MATTER</b>		
Int. Cl. <b>G09F 3/00</b> (2006.01) <b>G09F 3/02</b> (2006.01) <b>G09F 3/04</b> (2006.01)		
According to International Patent Classification (IPC) or to both national classification and IPC		
<b>B. FIELDS SEARCHED</b>		
Minimum documentation searched (classification system followed by classification symbols)		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) WPAT + keywords (identity, band, strap, wrist, ankle, tamper, security, separate, divide, adhesive, weak, tear, perforate, software, print and similar terms)		
<b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b>		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	CA 2015183 A1 (SERVICES GRAPHIQUES SOUTHAM PARAGON) 23 October 1991 Whole document especially page 6 line 20 to page 9 line 16 and figures 1 to 4.	1-5, 7-15, 22-26, 28, 30, 33, 37-40, and 42-48
Y		6, 16-21, 27, 29, 31, 32, 34-36, 41
Y	US 2004/0237366 A1 (CHADWICK et al) 2 December 2004 Whole document especially paragraphs [0045] to [0055] and figures 2, 5, 6 and 7.	16-19, 27, 31, 34, 35
Y	WO 2002/039412 A2 (RILEY) 16 May 2002 Whole document especially page 8 line 11 to page 15 line 2 and figures 8 to 14.	6, 16-19, 27, 34, 35, 41
Y	US 2004/0113421 A1 (PENUELA et al) 17 June 2004 Whole document especially paragraphs [0005], [0011], [0012], [0032] to [0035] and [0039]	6, 16-19, 34, 35, 36, 41
<input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C <input checked="" type="checkbox"/> See patent family annex		
* Special categories of cited documents: "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier application or patent but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art "&" document member of the same patent family		
Date of the actual completion of the international search 14 December 2007		Date of mailing of the international search report <b>21 DEC 2007</b>
Name and mailing address of the ISA/AU AUSTRALIAN PATENT OFFICE PO BOX 200, WODEN ACT 2606, AUSTRALIA E-mail address: pct@ipaustralia.gov.au Facsimile No. +61 2 6283 7999		Authorized officer <b>DEREK BARNES</b> AUSTRALIAN PATENT OFFICE (ISO 9001 Quality Certified Service) Telephone No : (02) 6283 2198

## INTERNATIONAL SEARCH REPORT

International application No.

PCT/AU2007/001556

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2003/0019924 A1 (MULLINS et al) 30 January 2003 Whole document especially paragraphs [0007], [0019], [0021], [0022] to [0024], [0028], [0029]	16 to 21, 29, 31
Y	US 5752776 A (KUNREUTHER) 19 May 1998 Abstract	32
A	WO 1995/020336 A1 (PRECISION DYNAMICS CORPORATION) 3 August 1995 Whole document especially page 15 line 25 to page 16 line 10	

## INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/AU2007/001556

This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent Document Cited in Search Report		Patent Family Member					
CA	2015183	NONE					
US	2004/0237366	NONE					
WO	2002/039412	AU	26931/02	AU	96020/98	AU	2003279722
		AU	2005262508	CA	2304806	CA	2408367
		CA	2427249	CA	2500438	CA	2549631
		CA	2567762	CN	1700993	CN	1969306
		EP	1045652	EP	1344204	EP	1545903
		EP	1704550	EP	1774495	US	5933993
		US	6000160	US	6067739	US	6438881
		US	6510634	US	6748687	US	7017293
		US	7017294	US	7047682	US	7222448
		US	2003/0177681	US	2004/0060215	US	2004/0060216
		US	2004/0068906	US	2004/0148836	US	2004/0244251
		US	2005/0279001	US	2006/0005441	US	2006/0059753
		US	2006/0059754	US	2006/0143961	US	2006/0168861
		US	2006/0218836	US	2006/0218837	US	2007/0089342
		US	2007/0220796	WO	1999/018817	WO	2004/028826
WO	2005/064574	WO	2006/007356	WO	2007/021375		
US	2004/0113421	AU	2003298632	BR	0317423	CA	2516180
		CN	1729109	EP	1578616	US	2004/0164544
		WO	2004/061749	WO	2005/081928		
US	2003/0019924	US	6142368	US	6352205	US	6474557
		US	6663006	US	2002/0070275	US	2004/0056088
		US	2005/0040228				
US	5752776	NONE					
WO	1995/020336	AU	17368/95	CA	2182119	EP	0739173
		US	5799426				
Due to data integration issues this family listing may not include 10 digit Australian applications filed since May 2001.							
END OF ANNEX							