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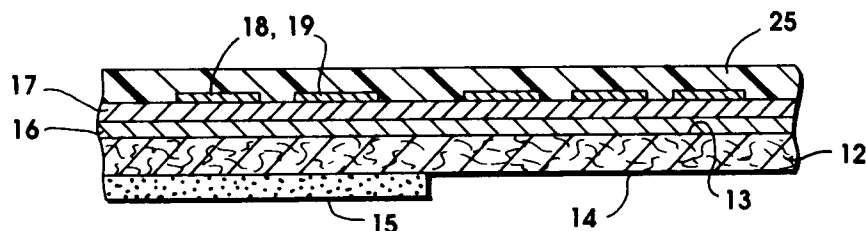
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(54) **A linerless thermally printed baggage tag.**

(57) A linerless thermosensitive baggage tag is constructed from a substrate (12) having first and second faces (13, 14), with pressure sensitive adhesive (15) (such as acrylic or rubber based hot melt adhesive) applied to only a part of the second face (14). The thermosensitive layer (16) is on the substrate first face (13) and may or may not have a barrier coating (17). Baggage tag indicia (18, 19), such as claim check numbers, are formed on the thermosensitive layer, and a release coating (25) of a material that has a low adherence to the pressure sensitive layer covers the thermosensitive layer (and barrier coat if present). The release coating may be a UV curable silicone release coat. The substrate includes a perforation (21) separating each individual tag into a claim check portion (22) and a luggage application portion (23), both being imaged with the same claim check number. Printing (27) may also be provided on the second face of the substrate.

FIG. 3



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BACKGROUND AND SUMMARY OF THE INVENTION

Some conventional baggage tags, such as used by airlines, include multi-color printing on top of a barrier coat which is on top of a direct thermal coating on a substrate providing the face of the tag. Permanent adhesive is located on the back of the tag affixing the tag to a liner containing a release coating on its surface facing the adhesive. The liner contains release coating on its top side and printing on the back. The liner and claim check can be removed from the pressure sensitive adhesive baggage tag and then stapled or adhered to the packet containing the passenger's tickets or the like. While such a construction is suitable, it would be desirable if the expense, waste, and other drawbacks associated with the release liner could be avoided.

According to the present invention, a linerless thermosensitive baggage tag, and web containing a continuous construction of such tags, are provided which are entirely functional and practical. Also according to the present invention a method of making a supply of linerless thermosensitive baggage tags that is simple yet effective is also provided.

According to one aspect of the present invention a linerless thermosensitive baggage tag is provided which has the following components: A substrate having first and second faces. A pressure sensitive adhesive disposed in a pattern covering at least a part of the second face of the substrate. A thermosensitive layer on the substrate first face. Baggage tag indicia formed on the thermosensitive layer. And, a release coating, of a material that has a low adherence to the pressure sensitive adhesive, covering the thermosensitive layer. The release coating may be applied directly on the thermosensitive layer, or a barrier coat may be provided. The barrier coating, with the proper formulation, could also function as a release coating, that is the barrier and release coatings could be combined into a single formulation.

The tag also comprises a line of weakness (e.g. perforation) separating the substrate into a claim check portion and a luggage applicator portion. The indicia preferably comprises two color indicia, and includes a claim check number printed on both the claim check portion and the luggage applicator portion. Typically the pressure sensitive adhesive is provided over a part of the luggage applicator portion, not on the other part of the luggage applicator portion or on the claim check, although it may be provided on the claim check if desired. Also the baggage tag indicia may be imaged on a second face of the substrate, especially where not covered by pressure sensitive adhesive.

A wide variety of different pressure sensitive adhesives can be used, including repositional, permanent, removable, or the like. The pressure sensitive

adhesive could be water based, solvent based, hot melt, UV or EB radiation curable, encapsulated, or rewettable. Particularly useful are acrylic or rubber based hot melt adhesives, such as Schenectedy 11939, or Swift 84425, which are applied at a thickness of about 0.7-1 mil.

The release coat also may be provided by a wide variety of materials. UV curable silicone release coat material has been shown to be particularly useful, such as GE 9300 UV silicone. This particular release coat is applied at a rate of about 0.8-1 pound per 3,000 square feet of substrate.

The thermal substrate may be made of paper, film, Kimdura®, VALERON, or like material that is substantially tear resistant. Particularly useful substrates are direct thermal T0980 from Appleton.

According to another aspect of the present invention, a web of linerless thermosensitive baggage tags is provided, comprising the following elements: A substrate having first and second faces. Lines of weakness separating one tag from another, and a claim check portion from a luggage applicator portion. A pressure sensitive adhesive covering at least part of the second face of the substrate. A thermosensitive layer on the substrate first face with indicia imaged thereon, including the same claim check number on both the claim check portion and the luggage applicator portion. And, a release coat, of a material that has a low adherence to the pressure sensitive adhesive, covering the thermosensitive layer.

According to yet another aspect of the present invention a method of making a supply of linerless thermosensitive baggage tags from a substrate having a thermosensitive layer on a first face thereof, and a second face, is provided. The method comprises the following steps: (a) Continuously moving the substrate in a first direction. (b) Imaging baggage tag indicia on the thermosensitive layer. (c) Applying a release coating to the thermosensitive layer, the release coating having non-stick characteristics with respect to a pressure sensitive adhesive. (d) Applying the pressure sensitive adhesive coating so that it covers at least part of the second face of the moving substrate. However, steps (c) and (d) can be reversed. (e) Drying the pressure sensitive adhesive and release coatings under conditions which do not cause significant adverse reaction of the thermosensitive layer. (f) Providing separating lines for individual tags to be separated from the substrate. (g) Forming a line of weakness in each tag separating a baggage applicator portion from a claim check portion. And, (h) rolling the substrate into a roll, with the release coated second face on the outside of the roll.

Step (c) is preferably practiced by applying the pressure sensitive adhesive to only a part of the second face so that a part of the second, including the claim check portion, is not coated with adhesive. There is also preferably the further step of imaging

the baggage tag indicia on the non-pressure sensitive adhesive coated portion of the second face of the substrate. Step (c) may be practiced to apply an adhesive selected from the group consisting essentially of acrylic and rubber based hot melt adhesives, which are applied at a thickness of about .7-1 mil; and step (d) may be practiced by applying a UV curable silicone release coat at a rate of roughly about 0.8-1 pound per 3,000 square feet of substrate.

It is the primary object of the present invention to provide a simple yet effective linerless baggage tag and method of construction thereof. This and other objects of the invention will become clear from an inspection of the detailed description of the invention and from the appended claims.

BRIEF DESCRIPTION OF THE DRAWINGS

FIGURE 1 is a bottom plan view of a web of exemplary thermosensitive linerless baggage tags according to the present invention;

FIGURE 2 is a top plan view of the structure of FIGURE 1;

FIGURE 3 is a side schematic view, with the layers greatly exaggerated for clarity of illustration, of a portion of the exemplary baggage tags of FIGURES 1 and 2;

FIGURE 4 is a schematic showing various method steps that may be practiced according to the method of the present invention; and

FIGURE 5 shows a baggage tag of FIGURES 1 through 3, including claim check and luggage applicator portions thereof, in use.

DETAILED DESCRIPTION OF THE DRAWINGS

An exemplary continuous web of baggage tags according to the invention is shown generally by reference numeral 10 in FIGURES 1 and 2, having a plurality of baggage tags 11 in sequence in a web. Each baggage tag 11 comprises a substrate 12 (see FIGURE 3) having a first face 13 ("top" face) and a second face ("bottom" face). The substrate may be of paper (such as bond paper), film, vinyl-like sheet material such as Kimdura®, VALERON, or the like.

Disposed on the second face 14 of the substrate 12 is a pressure sensitive adhesive coating 15. As seen in both FIGURES 1 and 3, the coating 15 is preferably not applied over the entire face 14, but rather is disposed in a pattern, spaced from other like coatings 15 on other baggage tags 11. Typically the pressure sensitive adhesive coating 15 covers only part of the baggage tag 11 so that the baggage tag can be properly positioned on a handle of a piece of luggage without the adhesive engaging the luggage itself. The adhesive pattern 15 may be of greater extent or lesser extent than illustrated in FIGURES 1 and 3, depending on the circumstances.

The pressure sensitive adhesive 15 may be any suitable adhesive, including repositionable, removable, permanent, or rewettable, and can be water base, solvent-base, hot melt, or UV or EB radiation curable. While a wide variety of adhesives may be utilized, two particularly useful adhesives are acrylic based hot melt adhesive such as Schenectady 11939, or rubber based hot melt adhesive such as Swift 84425. The thickness of the coating of adhesive 15 (see FIGURE 3) preferably is about 0.7-1 mil.

A tag 10 also comprises a thermosensitive layer 16 on the first face 13. The thermosensitive layer may be any conventional thermosensitive material. Usually the substrate 12 and thermosensitive material are purchased from the vendor together, such as direct thermal T1062A from Appleton, however the thermosensitive coating can be applied with the rest of the coatings. Also, a conventional barrier coating 17 is optionally provided. The barrier coating 17 may be provided in association with a release coating as will be hereinafter described.

Baggage tag indicia is formed on the thermosensitive layer, as indicated by the general (e.g. airport or airline name) indicia 18, and preferably also a claim check number 19. The indicia 18, 19 are imaged in any desired conventional manner. Typically at least some of the indicia (e.g. the indicia 18) is at least two color. The indicia 18 may also include thermally printed bar coding, which can be effectively read with a scanner.

Each ticket 11 is separated from the other tickets by a line 20, as seen in FIGURES 1 and 2. The line 20 is typically a die cut line, perforation, or like line of weakness. Also there may be another line of weakness, such as a perforation line 21, that separates a claim check portion 22 of the baggage tag 11 from a luggage applicator portion 23. Both the claim check portion 22 and the luggage applicator portion 23 have claim check indicia 19 printed thereon. Also, the ticket 11 may be provided with a fold line 24.

The baggage tags 11 also have a release coating 25 (see FIGURE 3), of a material that has a low adherence to the pressure sensitive adhesive 15. The release coating 25 covers the thermosensitive layer 16. It either may cover it by being applied to the barrier layer 17, or may be applied directly to the thermosensitive layer 16 (see co-pending application serial no. 07/914,116 filed July 15, 1992, the disclosure of which is hereby incorporated by reference herein). The release coating 25 may be any suitable release coating, depending upon the adhesive 15, but normally will be a silicone release coating. For example, the release coating may be a UV curable silicone, such as GE 9300, which is applied at a rate of roughly about 0.8-1 pound per 3,000 square foot area of substrate 12.

Finally, indicia 27 (see FIGURE 1) may be printed on the bottom face 14 of the tag 11 too, this indicia

27 typically being one color. Indicia 27 is typically imaged by a printer or the like.

FIGURE 4 illustrates, schematically, exemplary method steps that can be practiced in order to produce and utilize the final product according to the invention. The substrate 12, 16 is continuously moved in a first direction, and baggage tag indicia is imaged on the thermosensitive layer at 30. Then the back face 14 is printed (e.g. with indicia 27) as indicated by box 31, and a release coat 25 is applied as indicated at 32: The patterned adhesive coating 15 is then applied to the back face 14 as indicated at 33. Of course the steps 31 through 33 may be practiced in other orders. Ultimately, after the web 10 is produced, it is rolled up into a roll as indicated at 34.

Once the roll is produced at 34, it will be dispensed -- at the site where the baggage tags 11 are to be utilized (e.g., airport) -- as indicated at 35. When each individual tag 11 is dispensed -- by severing from the next tag along line 20 -- the claim check portion 22 thereof is detached along perforation line 21 -- as indicated by box 36 in FIGURE 4. The claim check portion or portions 22 from one or more baggage tags 11 are then stapled or otherwise affixed inside of a ticket jacket 39 (see FIGURE 5) or the like. The luggage applicator portion 23 is then wrapped around -- as indicated by box 37 in FIGURE 4 -- the handle 40 (see FIGURE 5) of a piece of luggage 41, or similarly attached to the luggage. The adhesive coating 15 engages the back face 14 which may or may not be provided with an adhesive, to hold the luggage applicator portion 23 in place. Depending upon the extent of the coating 15 it may or may not itself contact the luggage handle 40.

Examples of particular procedures applying specific release coatings and adhesives will now be set forth:

Example 1

The back of a roll of Appleton T0980 direct thermal Kimdura® synthetic paper was coated with Schenectady HRJ-11939 hot melt adhesive, using a Kraemer Koating Laboratory coater, and in another run an Acumeter Laboratories LH-2 laboratory coater. The face (13) of the thermal roll had previously been printed with a multi-color logo and then overcoated with GE 9300 UV silicone on a Research UV press. The Schenectady 11939 adhesive is an acrylic based hot melt adhesive. The temperature of the hopper, manifold, and nozzle during hot melt coating were about 150°C, 140°C, and 130°C, respectively. At these temperatures no darkening of the thermal paper results. Higher temperatures can be handled if the backer roller is chilled, line speed is increased or adhesive coating weight is lowered. Using one UV lamp it was found that with a line speed of about 500 feet per minute, and coating weight of about 0.8-1

pound per 3,000 square foot of substrate, the single lamp properly dried the release coating under conditions which did not cause significant adverse reaction of the thermosensitive layer. Products so produced passed peel testing, adhesive tape testing, and rub testing.

Example 2

This example is carried out very similarly to Example 1 except that the hot melt adhesive was Swift 84425 adhesive, which also can be utilized to obtain an acceptable quality end product.

While the above examples indicate the feasibility of producing baggage tags 11 according to the invention, in commercial practice different equipment will be utilized and different procedures and temperatures, etc., may also be necessary. For example, the hot melt adhesive may be applied with a ITW Dynatec hot melt adhesive slot die application system, or a similar Nordson system.

It will thus be seen that according to the present invention, suitable linerless thermosensitive baggage tags can be produced. In addition, the invention may be used to produce labels having bar codes for packages to be shipped. While the invention has been herein shown and described in what is presently conceived as the most practical preferred embodiment, it will be apparent to those of ordinary skill in the art that many modifications may be made thereof within the scope of the invention, which scope is to be accorded the broadest interpretation of the appended claims so as to encompass all equivalent structures and methods.

Claims

1. A linerless thermosensitive baggage tag (11), comprising:
 - a substrate (12) having first and second faces (13, 14);
 - a pressure sensitive adhesive (15) disposed to cover only a part of said second face (14) of said substrate;
 - a thermosensitive layer (16) on said substrate first face (13);
 - baggage tag indicia (18, 19) formed on said thermosensitive layer; and
 - a release coating (25), of a material that has a low adherence to said pressure sensitive adhesive, covering said thermosensitive layer.
2. A baggage tag as recited in claim 1 characterised in that said release coating is either directly on said thermosensitive layer or a barrier coat (17) is located directly on said thermosensitive layer between said indicia and release coating, and

said thermosensitive layer.

3. A baggage tag as recited in claim 1 or claim 2 characterised by a line of weakness (21) dividing the tag into a baggage applicator portion (23) bearing adhesive and a detachable claim check portion (22) not bearing adhesive; and wherein said indicia comprises a claim number on said claim check portion, and the same claim number on said baggage applicator portion. 5
10
4. A baggage tag as recited in claim 3 characterised in that said baggage applicator portion (23) is dimensioned so that it can wrap around a handle of a piece of luggage with a part thereof adhesively secured to another part thereof. 15
5. A baggage tag as recited in claim 3 or claim 4 characterised in that said pressure sensitive adhesive covers only a part of said baggage applicator portion. 20
6. A baggage tag as recited in any of claims 1 to 5 characterised in that said indicia on said first face includes two or more color indicia, and in that it includes indicia on said second face comprising one color indicia. 25
7. A baggage tag as recited in any of claims 1 to 6 characterised in that said release coating comprises a UV curable silicone release coat applied at a rate of roughly about 0.8-1 pound per 3,000 square feet of substrate. 30
8. A baggage tag as recited in any of claims 1 to 7 characterised in that said adhesive is selected from the group consisting essentially of acrylic based and rubber based hot melt adhesives, and wherein said adhesive has a thickness of about .7-1 mil. 35
40
9. A web of linerless thermosensitive baggage tags each according to any of claims 1 to 8 and including lines of weakness (20) separating one tag from another. 45
10. A method of making a supply of linerless thermosensitive baggage tags, from a substrate having a thermosensitive layer on a first face thereof, and a second face, comprising the steps of: 50
 - (a) continuously moving the substrate in a first direction;
 - (b) imaging baggage tag indicia on the thermosensitive layer;
 - (c) applying a release coating to the thermosensitive layer; 55
 - (d) applying a pressure sensitive adhesive coating so that it covers at least part of the

second face of the moving substrate, the pressure sensitive adhesive having non-stick characteristics with respect to the release coating;

(e) drying the pressure sensitive adhesive and release coatings under conditions which do not cause significant adverse reaction of the thermosensitive layer;

(f) providing separate lines for individual tags to be separated from the substrate;

(g) forming a line of weakness in each tag separating a baggage applicator portion from a claim check portion; and

(h) rolling the substrate into a roll, with the release coated second face on the outside of the roll.

FIG. 1

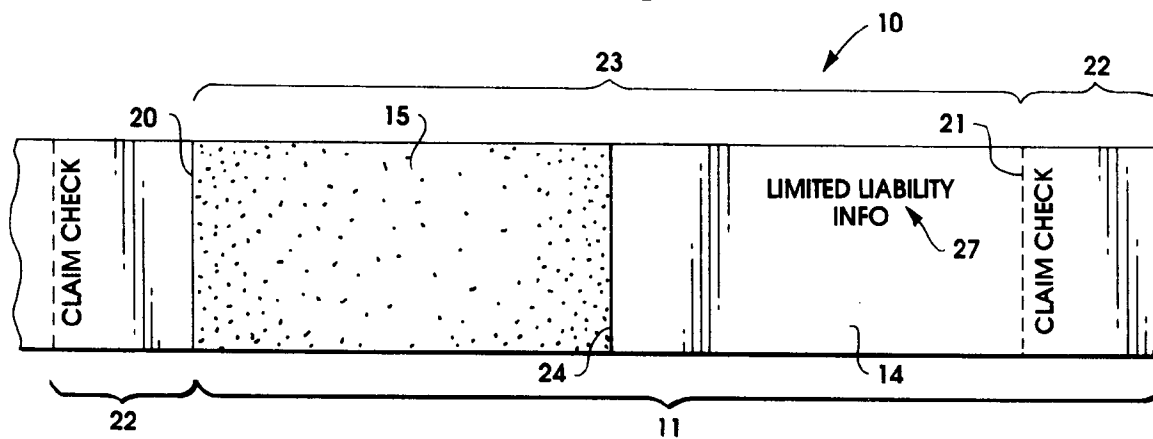


FIG. 2

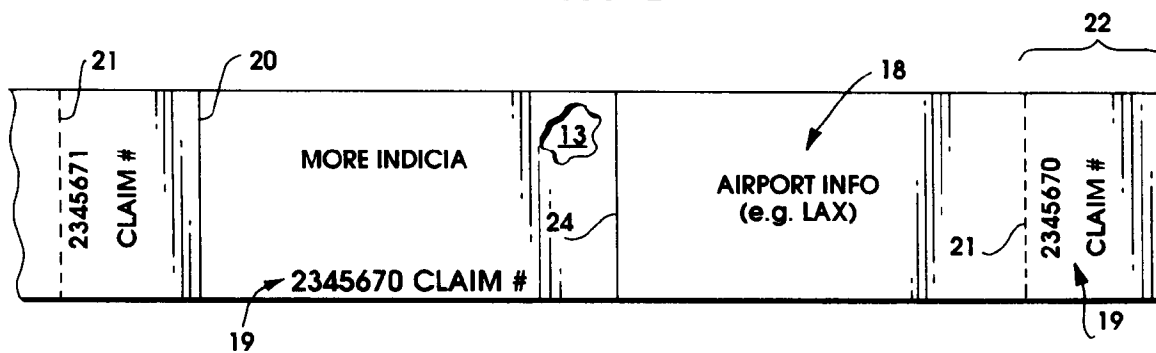


FIG. 3

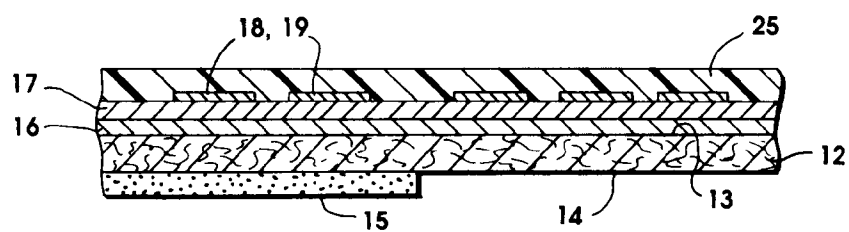


FIG. 4

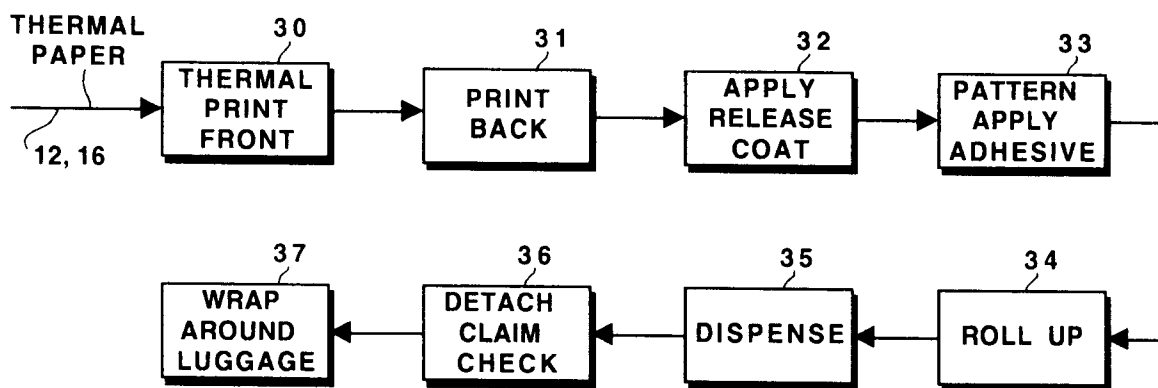
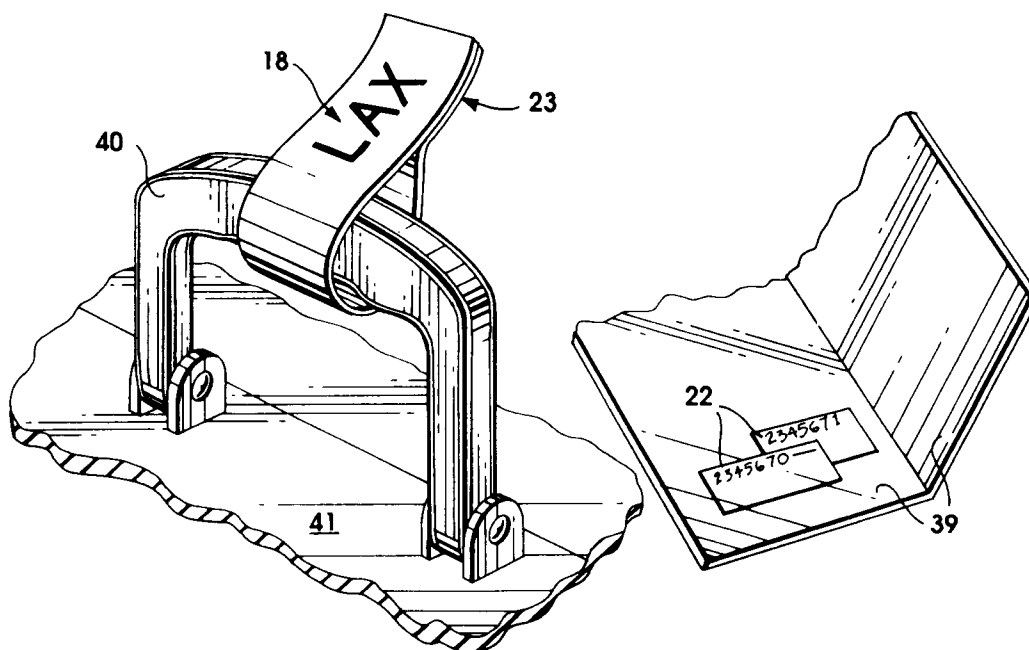


FIG. 5





European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 93 30 8945

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.5)
Y	WO-A-89 08907 (KOMET - DRUCK HEINZ GÖTTEL) * page 5, paragraph 4 -paragraph 5 *	1	G09F3/02
Y	EP-A-0 353 906 (MINESOTA MINING AND MANUFACTURING COMPAGNY) * column 4, line 25 - line 43; figure 5 *	1	
A	US-A-2 346 219 (R. E. JOHNSON) * page 1, left column, line 55 - right column, line 17; figures 1,2 *	9	
A		1,9,10	
			TECHNICAL FIELDS SEARCHED (Int.Cl.5)
			G09F B31D
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 16 March 1994	Examiner Hulne, S
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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