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(71) Applicant: **AB EKONOMITRYCK**
S-690 70 Palsboda (SE)

(72) Inventor: **Minami, Isoa**
No. 1 Havaikata-Machi
Shinjuku-ku, Tokyo, 162 (JP)
Inventor: **Olsson, Kjell, AB Ekonomitryck**
Tengvallsgatan 39
S-703 47 Örebro (SE)

(74) Representative: **Larsson, Kjell et al**
AWAPATENT AB, Box 7645
S-103 94 Stockholm (SE)

(54) **Mailer form and process.**

(57) A mailer form or similar made from paper and intended to be sealed by means of adhesive applied thereupon, the characterizing features thereof being that it is provided with adhesive strips comprising a first pressure sensitive adhesive layer applied onto the paper and a second moisture sensitive adhesive layer applied on top thereof. Preferably the pressure sensitive adhesive is a natural rubber-based adhesive, while the moisture sensitive adhesive is preferably an ethylene-vinylacetate copolymer-based adhesive.

A process for the manufacture of the above-mentioned form, which comprises firstly coating the paper with a layer of the pressure sensitive adhesive and then applying the moisture sensitive adhesive on top thereof. Preferably the two adhesives are aqueous based and preferably they are dried by means of a radio frequency drying operation.

EP 0 455 615 A1

Technical field

The present invention relates to a mailer form or similar form or product made from paper, which form or product is intended to be sealed by means of an adhesive or glue applied thereupon. More specifically the invention relates to a mailer form or product of the type which when unfolded is provided with adhesive strips along the outer edges thereof and which is sealed by a folding operation where said adhesive strips are brought into contact with each other. Furthermore, such forms or products are often perforated, which perforations are torn away together with the adhesive sealings when one wishes to study the contents of said sealed products. The invention also relates to a process for the manufacture of a mailer form or similar product of the type referred to above.

Background of the invention

Mailer forms or other forms of the type referred to above are today well known products, viz. in the form of separate forms or so called chain forms, which after having been provided with the requisite information are typically sealed by means of form sealing machines known per se. Therefore, neither the general structure or nature of such forms nor the constructions of such sealing machines need be further described here.

One problem in connection with the previously used forms is, however, that those types of adhesives which have been used for the sealing have not been satisfactory in all aspects.

Thus, a moisture or vapour sensitive adhesive or an adhesive of the heat sealing type have been utilized, but for both these types of adhesives it has been possible to open the sealing in an essentially invisible way and then reseal the same without any signs thereof.

However, the desire has of course been to accomplish a sealing which cannot be opened in an invisible way, i.e. without destroying said sealing.

Nor has it been possible to accomplish this in a satisfactory way by means of a pressure sensitive adhesive, especially as today laser printing technique is typically utilized in connection with forms of the above-mentioned type. Thus, most laser printers utilize silicon oil as a cleansing and/or lubricating agent, which means that the form upon which adhesive has been applied is coated with a thin silicon film, i.e. also on top of the adhesive areas, the consequence of which is that the pressure sensitive adhesive strips do not contact each other when the form is folded and sealed.

The present invention provides a solution to the abovementioned problem.

A major purpose of the invention thus is to accomplish a mailer form or similar, which can be sealed in such a way that it is not possible to open the sealing in an invisible way and then reseal the same.

Another purpose of the invention is to provide a mailer form or similar, which is in practice useful in connection with the laser printing technique, viz. partly at the high temperatures required at said technique, partly in connection with the use of silicon oil.

Still another purpose of the invention is to provide a specific process by means of which mailer forms of the above-mentioned type and with the above-mentioned properties can be manufactured.

Disclosure of the invention

The mailer form according to the present invention is characterized in that those adhesive strips by means of which the sealing is accomplished comprise a first pressure sensitive adhesive layer applied onto the paper and a second moisture sensitive adhesive layer applied on top thereof.

By this new combination of adhesive types applied in the stated orders it has thus unexpectedly been shown to be possible to eliminate the above-mentioned disadvantages of the prior art.

The fact that a good or outstanding pressure sealing is obtained, i.e. that the sealing cannot be opened without any signs thereof, is unexpected in that the pressure sensitive adhesive is initially covered by a layer of moisture sensitive adhesive applied on top thereof. Thus, it would have been expected that the necessary contacts for a pressure sealing would not be obtainable in a simple and satisfactory way. Nor could it be expected that the above-mentioned problems in connection with laser printers could be eliminated by means of the technique according to the present invention. Apparently, however, the moistening of the moisture sensitive adhesive causes a softening of the same, which makes said moisture sensitive adhesive together with the silicon film to be pushed aside at the subsequent application of pressure to provide a sealing by means of the pressure sensitive adhesive via a contact adhesive against adhesive. It was not either possible to predict that this might be obtainable at those high temperatures and those high rates which are utilized in laser printers.

As concerns the expressions "pressure sensitive" and "moisture sensitive" in connection with the adhesives or glues referred to, it should be noted that said terms are utilized in those meanings which are previously known per se. In other words the pressure sensitive adhesive relates to an adhesive where a relatively high pressure is applied to accomplish contact adhesive to adhesive, while the moisture sensitive adhesive relates to an adhesive where moisture or vapour, preferably in the atomized form, is applied to moisten and soften the adhesive referred to.

However, in connection with the invention it has been shown to be possible to obtain outstanding or

exceptional results by means of a specific type of pressure sensitive adhesive and a specific type of moisture sensitive adhesive, respectively. Thus, according to a preferable embodiment of the invention the pressure sensitve adhesive is natural rubber-based adhesive, i.e. a natural rubber latex.

According to another preferable embodiment of the invention the moisture sensitive adhesive is an adhesive based on an ethylene-vinylacetate copolymer.

Now that the espcially preferable groups of the two types of adhesives have been disclosed, it should cause a person skilled in the art no problems to find, experimentally or in any other way, suitable adhesive compositions for each single case. Moreover, it is possible to incorporate into the adhesives referred to, in any conventional way, common ingredients or additives of the types: antioxidants, stabilizers, preservative agents, etc.

The invention also relates to a process for the manufacture of the mailer form claimed, said process being characterized by first coating the paper with a layer of the pressure sensitive adhesive and then applying a second layer of the moisture sensitive adhesive thereupon.

According to a preferable embodiment of the process according to the invention both adhesive layers are applied in the form of aqueous products or solutions. Furthermore, such aqueous solutions are preferably ammonium-based, especially such that the ammonium content thereof is at most 10 percent by weight or more preferably at most 7 percent by weight of ammonium.

According to still another preferable embodiment of the process claimed the desired two-layer-configuration of adhesives is obtained in a very effective way by drying the two adhesive layers by means of radio frequency drying. Such a radio frequency drying operation is preferably performed by means of a short wave-radio frequency drying.

As concerns especially preferable pressure sensitive adhesives and moisture sensitive adhesives, respectively, references are made to the above-mentioned information given in connection with the mailer form per se.

Claims

1. A mailer form or similar made from paper and intended to be sealed by means of adhesive applied thereupon, especially a form of the type which when unfolded is provided with adhesive strips along the outer edges thereof, which edges are generally perforated and which are sealed by a folding operation such that said adhesive strips are brought into contact with each other, **characterized** in that the adhesive strips comprise a first pressure sensitive adhesive layer applied onto the paper and a second moisture sensitive adhesive layer applied on top thereof.

2. A form according to claim 1, **characterized** in that the pressure sensitive adhesive is a natural rubber-based adhesive.

3. A form according to claim 1 or 2, **characterized** in that the moisture sensitive adhesive is an ethylene-vinylacetate copolymer-based adhesive.

4. A form according to any one of the preceding claims, **characterized** in that it is of the type which is utilized in laser printers using silicon oil as a cleansing and/or lubricating agent.

5. A process for the manufacture of a mailer form according to claim 1, **characterized** by firstly coating the paper with a layer of pressure sensitive adhesive and then applying a second layer of moisture sensitive adhesive thereupon.

6. A process according to claim 5, **characterized** in that the two adhesive layers are applied in the form of aqueous solutions, preferably ammonium-based aqueous solutions with at most 10 percent by weight of ammonium.

7. A process according to any one of claims 5-6, **characterized** by drying the two adhesive layers by means of a radio frequency drying operation, preferably a short wave radio frequency drying.

8. A process according to any one of claims 5-7, **characterized** in that the pressure sensitive adhesive is a natural rubber-based adhesive.

9. A process according to any one of claims 5-8, **characterized** in that the moisture sensitive adhesive is an ethylene-vinylacetate-based adhesive.

European Patent Office

EUROPEAN SEARCH REPORT

Application Number

EP 91 85 0095

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)
P,A	DE-U-9 006 788 (AWA COUVERT AUGUST WEGENER)		B42D5/02
A	US-A-4 784 317 (AVERY INTERNATIONAL)		

TECHNICAL FIELDS SEARCHED (Int. Cl.5)

B42D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	12 AUGUST 1991	LONCKE J.W.

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
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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
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