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C. F. REED

3,257,228

RESEALABLE LABEL

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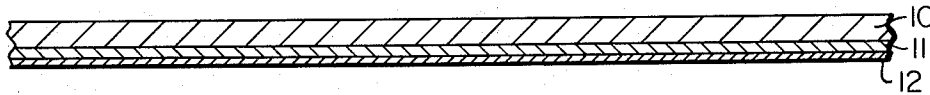


FIG. 1

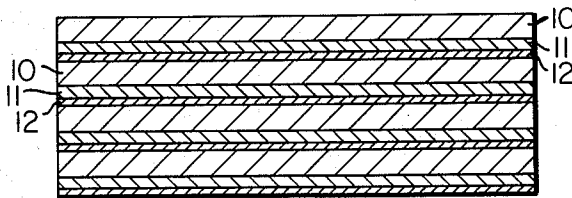


FIG. 2

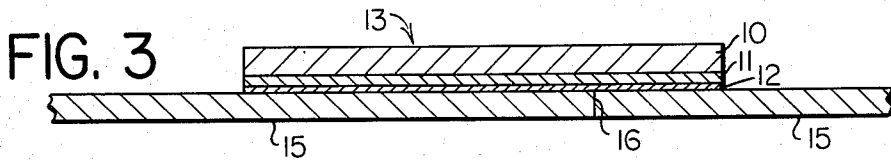


FIG. 3

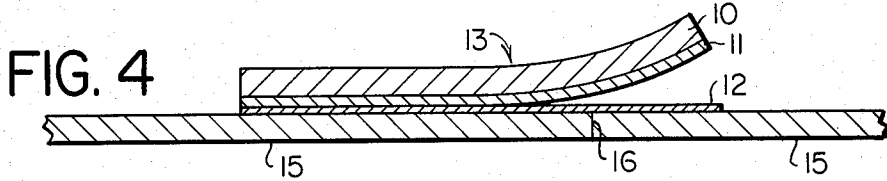


FIG. 4

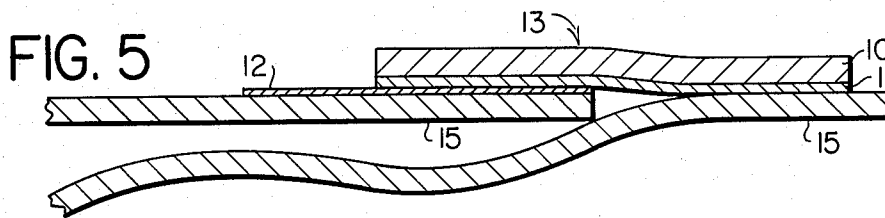


FIG. 5

INVENTOR.

CHARLES F. REED

BY

Ely Learne Gordon

ATTORNEYS

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3,257,228

RESEALABLE LABEL

Charles F. Reed, Painesville Township, Ohio, assignor to Avery Products Corporation, a corporation of California

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1 Claim. (Cl. 117-76)

This invention relates to an adhesive web stock product and to labels, stickers, and the like made from the web stock.

In the packaging field, labels and the like provided with heat setting adhesives, or otherwise heat sensitive adhesives (i.e. generally adhesives which are operatively activated by exposure to heat, as in heat-sealing devices) are widely used in such applications as sealing the ends of packages containing bread, cookies, sliced meats, and the like. Labels provided with heat sensitive adhesive are satisfactory for these purposes and possess certain advantages for a processor or converter, but the consumer in many cases prefers to have a package which can be opened and resealed if desired. In general, once a package sealed with a label or the like having a heat sensitive adhesive is opened, it can be closed only by rolling or folding the excess packaging material.

Resealing in a more positive manner is possible when a label or the like is provided with a pressure sensitive adhesive. However, conversion to machines which automatically apply pressure sensitive labels and the like is quite costly for converters and processors who are naturally unwilling to dispose of their existing heat-seal equipment.

The invention avoids disadvantages of labels and the like provided with heat sensitive adhesive and at the same time avoids the necessity for converters and processors to dispose of existing heat-seal equipment. The invention overcomes certain limitations on resealability inherent in labels and the like provided with heat sensitive adhesive, while at the same time the invention utilizes the resealing advantages of labels and the like having pressure sensitive adhesive.

The invention contemplates the provision of an adhesive product comprising a base web and a coating combination on the back face of the base web, the combination comprising a pressure sensitive adhesive coating and a heat sensitive adhesive coating, the pressure sensitive adhesive coating being located between the base web and the heat sensitive adhesive coating.

In an important aspect, the invention contemplates that the heat sensitive adhesive serves as a protective backing for the pressure sensitive adhesive. The heat sensitive adhesive need not be self-supporting in order to be stripable from the pressure sensitive adhesive as will more fully appear below.

As used herein, the terms "pressure sensitive adhesive" and "heat sensitive adhesive" mean, respectively, adhesives such that the first is tacky upon the application of pressure without its tackiness being essentially dependent upon temperature elevation, while the second becomes tacky only upon temperature elevation and, prior to temperature elevation, is substantially non-tacky or far less tacky than the pressure sensitive adhesive. These differing characteristics of the two adhesives make the adhesives readily distinguishable from each other irrespective of their particular formulations. However by way of example only, the following may be employed.

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Examples of heat sensitive adhesive:

EXAMPLE I

	Parts by wt.
5 Butadiene acrylonitrile copolymer of medium-high acrylonitrile content (approximately 33%) (Hycar 1432; "Hycar" is a trademark of Goodyear) -----	20
Heat reactive, oil soluble, alkyl-phenol formaldehyde resin manufactured by Schenectady Chemicals, Inc., under the trade name (Schenectady SP-12) --	10
10 Methyl ethyl ketone (solvent) -----	100

EXAMPLE II

15 Polyvinyl chloride resin (Geon 400X110) -----	5
Medium high nitrile content rubber (Hycar 1432) --	10
Phenolic resin (Schenectady SP-12) -----	5
Triphenyl phosphate -----	2
Methyl ethyl ketone (solvent) -----	100

EXAMPLE III

20 Carboxylic nitrile rubber (Hycar 1072) -----	20
Phenolic resin (Schenectady SP-12) -----	10
Triphenyl phosphate -----	5
Methyl ethyl ketone (solvent) -----	100

25 Hycar 1072 is further defined in U.S. Patent No. 2,724,707.

Examples of pressure sensitive adhesive:

EXAMPLE I

	Parts by wt.
30 Polyisobutylene polymer (high molecular weight) --	100
Polyisobutylene (viscous liquid) -----	70
Hexane (solvent) -----	100

EXAMPLE II

35 Polyvinyl ethyl ether -----	100
Hydrogenated rosin -----	30
Polyethylene glycol dirincinoleate -----	20
Hexane (solvent) -----	100

EXAMPLE III

40 Butadiene styrene copolymer (70-30 ratio) -----	100
Ester of hydrogenated rosin -----	30
Petroleum oil -----	50
Phenyl-alpha-naphthylamine -----	2
45 Hexane (solvent) -----	100

In the drawings, the thicknesses of the webs and coatings are greatly exaggerated.

FIGURE 1 schematically shows an adhesive product embodying the invention.

50 FIGURE 2 schematically shows a stack of labels die-cut or otherwise formed from the product shown in FIGURE 1.

FIGURE 3 shows one of the labels of FIGURE 2 applied over a seam and packaging material.

FIGURE 4 illustrates the initial removal of the label shown in FIGURE 3.

FIGURE 5 illustrates the re-application of the label shown in FIGURES 3 and 4.

60 Shown in FIGURE 1 is a web combination including a base web 10 of label stock or the like, a coating of pressure sensitive adhesive 11, and a coating of heat sensitive adhesive 12. The pressure sensitive adhesive coating 11 is sandwiched between the base web and the heat sensitive adhesive coating 12. The coating 11 is more strongly coherent than it is adherent to the heat activatable adhesive stratum 12. The pressure sensitive adhesive coat-

ing 11 is also more strongly adherent to the base web than it is adherent to the heat activatable adhesive coating or stratum 12.

These relationships are accomplished by the formulations given above. However, it should be understood that a variety of other adhesive combinations can be employed to give similar relationships when desired. The pressure sensitive adhesives may comprise in general materials prepared from butadiene-styrene copolymers or from natural rubber with varying proportions of natural or synthetic resins, mineral fillers, plasticizers, antioxidants and other additives, or vinyl polymers or polymers of methacrylic acid esters or other acrylic acid esters may be used. The polymer or rubber influences parting properties and imparts cohesiveness and strength to the adhesive. The adhesiveness may be determined by proportioning of tackifiers known to possess fairly specific wetting power, or particular polymers or resins may be selected, or the resin proportions may be varied. Dehydrogenated and hydrogenated rosin, polyvinyl ethers, pine tar and methyl esters of hydrogenated rosin, terpene polymers, and hydrogenated coumarone-indene resins may be used. Generally, the higher the proportion of tackifier to polymer, the higher the adherence. Generally the heat sensitive adhesives given above and a variety of other heat sensitive adhesives which have been in use are compatible with and will readily release from the pressure sensitive adhesive formulations given above, and others within the general preceding description, when the heat sensitive adhesives are activated by heat and applied to a surface and when thereafter the pressure sensitive adhesive is subsequently peeled from the surface of application as more fully described below.

The web combination shown in FIGURE 1 may be manufactured by coating the base stock 10 with the pressure sensitive adhesive 11, using suitable solvent to apply the coating. The coating solvent is then removed with heat, and the coating 11 is overcoated with the heat sensitive adhesive 12. The coating solvent for the latter coating operation is then removed with heat.

An alternative method is to coat the pressure sensitive adhesive on the label stock 10 and remove the solvent by heat, and meanwhile coat the heat sensitive adhesive 12 on a casting paper (not shown), removing the solvent by heat. The heat sensitive adhesive coating 12 is then mechanically applied to the pressure sensitive adhesive coating 11 while supporting the coating 12 on the casting paper. Removal of the casting sheet then exposes the heat sensitive adhesive 12 for use.

In actual use, the labels can be stacked to some extent, as shown in FIGURE 2, or otherwise conveniently manipulated or fed or arranged for storage or the like as illustrated. Each heat sensitive coating 12 serves as a protective backing for its associated pressure sensitive coating 11.

One of the labels of FIGURE 2 is shown in FIGURE 3 and is generally indicated by the reference numeral 13. The label 13 is shown being applied to a bread or cookie wrapping web 15 which has a seam 16. The label 13

closes the seam 16. The label 13 is heat sealed by the converter's or food processor's conventional heat-sealing equipment which activates the heat sensitive adhesive 12.

On opening the package, the user peels away the label 13 as indicated in FIGURE 4. The pressure sensitive adhesive 11 is peeled away together with the label base 10. The pressure sensitive adhesive 11 is thereby exposed for subsequent use. Left behind is the heat sensitive adhesive residue 12 which is structurally so weak or thin as to allow the packaging web 15 to fall apart or be easily parted at the seam 16.

For simplicity of illustration, a butt seam 16 has been illustrated, but in many cases the closure of the packaging material 15 will be in the form of a lap seam or the like.

After the removal of the bread slices, or the cookies, or slices of meat, or other ingredients, the package may be reclosed and resealed by folding or overlapping the excess wrapping material 15, as indicated in FIGURE 5, and re-applying the label 13. The pressure sensitive adhesive 11 is tacky and sticks to either the residue 12 of the heat sensitive adhesive or to the wrapping material 15.

The invention is not restricted to the slavish imitation of each and every one of the details and features described above which have been set forth merely by way of example with the intent of most fully setting forth the teaching of the invention. Obviously devices may be provided which change, eliminate, or add certain specific details and features without departing from the invention.

What is claimed is:

A flexible web product adapted to be applied to a surface, said product comprising a base web, a pressure sensitive coating on one side of said base web, and a heat sensitive adhesive coating on the side of said pressure sensitive coating remote from said web, said heat sensitive coating, at least prior to its activation by heat, providing a protective coating over said pressure sensitive coating, said pressure sensitive coating being more strongly coherent than it is adherent to said heat sensitive coating, at least after activation of the latter, and also being more strongly adherent to said base web than to said heat sensitive coating, said heat sensitive coating, at least after activation, being more strongly coherent than it is adherent to said pressure sensitive coating and more strongly adherent to said surface than to said pressure sensitive adhesive.

References Cited by the Examiner

UNITED STATES PATENTS

2,227,787	1/1941	Laufer	117—92
2,303,346	12/1942	Flood	161—406
2,753,285	7/1956	Pahl et al.	161—167
2,871,601	2/1959	Warnow	229—48
3,076,588	2/1963	Conway et al.	29—3.5

EARL M. BERGERT, *Primary Examiner.*

ALEXANDER WYMAN, R. J. ROCHE,
Assistant Examiners.