Sept. 15, 1964 W. H. VANDER WEEL ETAL 3,148,468

LABEL

Filed June 9, 1961

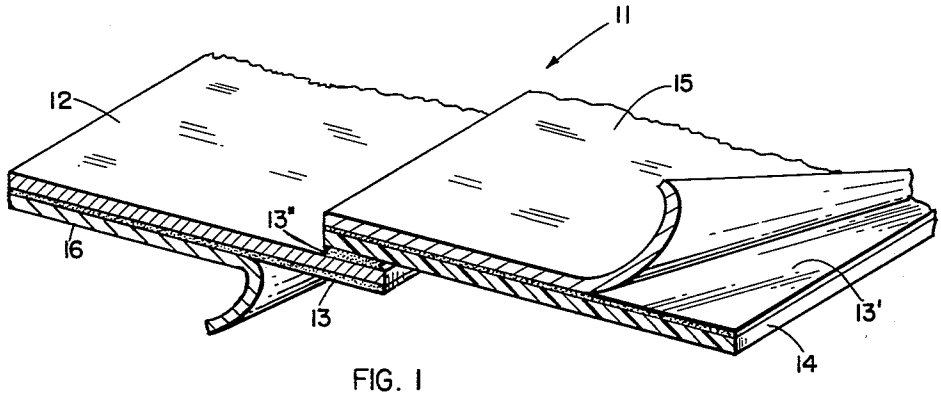


FIG. 1

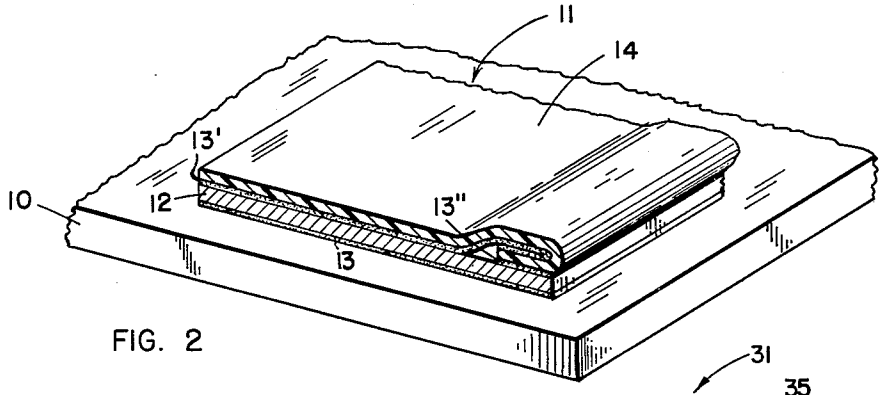


FIG. 2

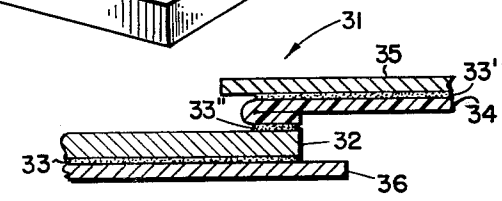


FIG. 3

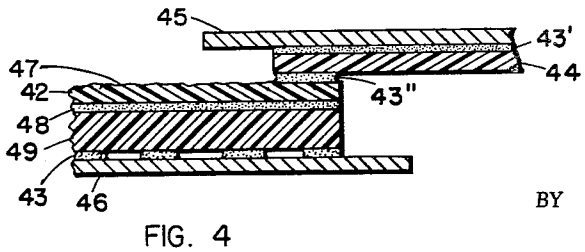


FIG. 4

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This invention relates to a label for goods and more particularly to a label which can be identifiably marked, operably adhered to an article, and retrovertedly folded onto itself to form a substantially chemically inert, weather resistant, tenaciously adherent, protectively covered mark.

Labels which are easily applied and which are durable in use have utility in many applications, such as in outdoor marking of structural steel, electrical conduits, valves, outlets, meters, parking areas and storage facilities, and indoor marking of stock shelves, bins, panelboards, samples, files, boxes and experimental and laboratory equipment. The article of this invention provides a label which can be easily affixed to and removed from goods without mutilating the goods, and which virtually cannot be unintentionally removed from goods by a person or by the destructive forces of natural elements or chemicals.

It is an object of this invention to provide a label for an article which can be easily applied to goods.

It is a further object of this invention to provide a detachable, tenaciously adherent label for goods.

Another object of this invention is to provide a label whereon non-permanent markings can be operably protected from obliteration.

Another object is to provide an improvement in the device described in United States Patent 2,670,971.

Other objects will become apparent from the drawings and from the following detailed description in which it is intended to illustrate the applicability of the invention without thereby limiting its scope to less than that of all equivalents which will be apparent to one skilled in the art. In the drawings like reference numerals refer to like parts and:

FIGURE 1 is a cross-sectional perspective view of a portion of an article of the invention.

FIGURE 2 is a cross-sectional perspective view of the embodiment of FIGURE 1 operably attached to goods.

FIGURE 3 is a cross-sectional view of a portion of another embodiment.

FIGURE 4 is a cross-sectional view of a portion of another embodiment.

In FIGURE 1, label **11** comprises inscribable paper sheet or web **12**, transparent synthetic resin film sheet or web **14**, adhesive layers **13**, **13'** and **13''**, and protective papers **15** and **16**. Adhesive **13** may be coated over the entire bottom surface of paper **12** as shown in FIGURES 1 and 2 or in strips over the entire bottom face of paper **12** in the manner shown in FIGURE 4 for adhesive **43** on material **49** which may be substituted for paper **12**. Adhesive **13''** is coated on an edge-adjacent portion of the top face of paper **12**, which portion overlaps in mating relationship an edge-adjacent portion of the bottom face of film **14** so as to adhesively unite film **14** with paper **12**. Adhesive **13'** is preferably coated over the entire top surface of film **14** as shown. Suitable compositions for adhesives **13**, **13'** and **13''** are described below. Protective papers **15** and **16** may extend beyond the exposed adhesive surfaces **13** and **13'**, as shown with respect to other embodiments in FIGURES 3 and 4. Protective paper sheets **15** and **16** are coated or impregnated with a composition to cause them to only weakly adhere to adhesive layers **13** and **13'**; such a composition may be one or more of: silicone resin, mineral salts or starch sizing or other

solid coherent compositions which are lubricious and adhesive in nature and which will not transfer to the adhesive layer or otherwise deleteriously affect this layer, so that sheets **15** and **16** may be easily removed.

In FIGURE 2 label **11** is shown affixed to article **10**; protective paper sheets or webs **15** and **16** of FIGURE 1 have been stripped from label **11** and markable paper sheet or web **12** may have been inscribed with indicia before transparent film **14** is folded by adhesive **13''**. Adhesives **13**, **13'** and **13''** may be of different thicknesses as shown and may be of similar or different compositions. The article of FIGURES 1 and 2 provides a firmly adherent and waterproof label that is resistant to chemical and solvent attack. In the folding of label **11**, after removal of the protective paper sheets **15** and **16**, adhesive layer **13'** is folded back upon itself as shown in FIGURE 2 so as to adhere the transparent film **14** to the inscribable paper **12**.

As shown in FIGURE 3, adhesive **33** is coated on the bottom portion of markable paper **32** and is provided with protective paper **36** in a manner similar to paper **16** of FIGURES 1 and 2. A transparent film **34** which corresponds to film **14** may have a portion adjacent one edge folded under and adhered to inscribable paper **32** by means of adhesive **33''** so that said edge portion contacts in mating relationship an edge-adjacent portion of the top face of markable paper **32** so as to adhesively unite the upper edge portion of inscribable paper **32** and the bottom surface of film **34**. The entire upper surface of the remainer of film **34** may be coated with adhesive **33'**. Protective paper **35** may be secured to the film **34** by adhesive **33'**, in the same manner as protective paper **15** in FIGURE 1. Adhesive **33''** and **33'** may be identical in composition and may be contiguous to form a single layer. Label **31** may be affixed to an article by removing paper **36** and adhering the label to the article with adhesive **33**. Protective paper **35** may then be removed, before or after indicia are marked on paper **32**, and film **34** may then be folded to contact markable paper **32** with adhesive **33'** so that adhesive **33'** adherently attaches the bottom surface of film **34** to inscribable paper **32**.

The material that is used for the markable portion of the label, herein previously described as markable paper or inscribable paper, may be any paper, plastic, or other material, either film or woven, which is receptive of ink, pencil marking, crayon, or other graphic printing, inscribing or writing media for providing indicia on the material.

As shown in FIGURE 4, we may provide a strip of transparent synthetic resin film **42**, having a matte finish **47** on its upper surface, which may be adhered with adhesive **48** (which may be colored) to a synthetic resin film **49**. The lower surface of film **49** may be coated in strips with adhesive **43**. A portion of the upper surface of transparent film **42** may be bonded adjacent one edge, by adhesive **43''**, to an edge-adjacent portion of the lower surface of film **44**. The entire upper surface of film **44** may be coated with pressure sensitive adhesive **43'**. Exposed adhesive surfaces **43** and **43'** may be covered with weakly adherent protective paper layers **45** and **46** which may extend beyond layers **43** and **43'** as shown so that the papers may be easily grasped with the fingers. Film **42** may be any suitable transparent film such as cellulose acetate. Adhesive **48** may be colored (with a pigment or by dyeing) a suitable color such as white to contrast with the indicia which may be marked on film **42**. Alternatively and preferably, film **42** may be colored, as by including a pigment or a dye in its composition, and if so, adhesive **48** may be either colored or transparent. Adhesive **48** need not be pressure sensitive. Film **49** is preferably a relatively thick film to provide bulk and may be, but need not be, transparent and may be moisture

resistant, suitable materials for the film 49 being for example polystyrene and cellulose acetate.

The protective papers for the adhesive in the several embodiments may be made from treated synthetic resin film or coated paper or other material which will cleanly separate from the adhesive on the label when the papers are stripped from the label. Materials that may be used to provide clean separation with ease include strongly coherent solid lubricious substances such as wax or silicones or dry comminuted firmly bound materials such as starch and mineral salts in a sizing composition.

The transparent protective film **14**, **34**, or **44**, may be of any material that possesses properties of high transparency to light, virtual imperviousness to water and water vapor, and good resistance to chemical and solvent attack. The film material which is employed must be firmly adhered to the adhesive material. Synthetic resinous film compositions which can be utilized as such transparent waterproof protective coverings include polyvinylchloride, polyvinylidene chloride, copolymers thereof such as Saran (registered trademark), cellulose acetate, polyvinylfluoride such as Teslar (registered trademark) polyethylene, halogenated polyethylene such as Teflon (registered trademark), or Kel-F (registered trademark), polypropylene, polyesters, hexamethylene diamine-adipic acid copolymers or others such as nylon and other continuous film compositions. The transparent protective covering portion of the label must be flexible, foldable and preferably resistant to chemical attack. Cellophane may be used but is inferior in utility to the other listed compositions because of its low strength and lack of moisture resistance.

Each of the adhesive layer portions of the label may be any suitable waterproof, solvent-resistant composition. In the preferred embodiments the adhesives that are used are composed of various pressure sensitive compositions. The various adhesive compositions used as the outside face coating for the transparent film and markable paper should be tenaciously adherent to the transparent film and to the non-legible under surface of the markable paper. It is to be preferred that the transparent film may be stripped from the legible face of the markable paper without mutilating the face of the markable paper. It is also preferred that the label, after the transparent film is stripped from the markable paper, be reusable. Hard drying adhesive materials may also be used in non-preferred embodiments. The adhesive composition for adhesively adhering the lower edge portion of the film with the upper edge portion of the markable paper should be stronger than the other adhesive compositions and be able to withstand substantial lateral tension.

The desirable properties of the preferred embodiments are best realized by using different adhesive compositions, one composition being used for the adhesive which provides the bond between the transparent film and the legible face of the markable strips, such as adhesive **13'**, **33'**, or **43'**, while adhesive **13**, a different composition, is used for **33** or **43**, which provides the bond between the label and the object to which it is adhered, and another composition is used for adhesive **13''**, **33''**, or **43''**, which provides the bond between inscribable material **12**, **32**, or **47** and the transparent film **14**, **34** and **44**. Adhesives **13''**, **33''** and **43''**, are preferably composed of a more tenaciously adherent composition than the compositions used for adhesives **13'**, **33'** and **43'**, or the compositions used for adhesives **13**, **33** or **43**. In the case of adhesives **13**, **33**, **43**, **13'**, **33'**, and **43'**, the protective paper must be removable from the adhesive without the transfer of these adhesives to the protective papers from the other portions of the label. Adhesives **13''**, **33''** and **43''** must be firmly adherent and able to withstand stresses tending to pull the markable paper and the film apart. In a less preferred embodiment, not shown for the sake of simplicity, all adhesives may be of identical or similar compositions.

By tenaciously adherent, we mean that after the label is affixed to an object, any attempt to strip the label from the object may result in tearing the paper apart rather than causing a failure of the bond between the paper and the adhesive. By "only non-destructively adherent" we mean that after being adhered to a markable surface such as the surface of paper **12**, the film **14** may be peeled from the surface **12** by parting of the adhesive bond between the adhesive and the paper without failure within the paper or failure at the bond between the adhesive and the film such as between **13'** and **14**. The composition of adhesive **13''**, **33''** or **43** is preferably such that the bond between protective transparent film **14**, **34** or **44** and the markable material **12**, **32** or **42** is preferably equal to or greater in strength than any other bond in the article of the invention so as to prevent complete separation of the markable material and the protective transparent film of the label during storage and use. Hence it is preferred that the composition of adhesives **13''**, **33''** or **43''** not be the same as that of adhesives **13**, **33** or **43**. The layer formed by adhesive **13''**, **33''** or **43''** may be (but need not be) a little thicker than the layers formed by the other adhesives. Thus, suitable adhesive composition which might be used include, for adhesives **13**, **33** or **43** (which is preferably transparent), and adhesives **13'**, **33'** or **43'** (which may be transparent but need not be):

	Pounds
Mixture of polymers of pinenes, principally beta pinene (nopinene), sold commercially as Piccolyte by Pennsylvania Industrial Chemical Corp., Clairton, Pennsylvania; having a specific gravity of about 99 and melting at about 130° F.	10 to 25
Natural rubber	50 to 60
Zinc oxide or other pigment	2 to 5
Cyclicized rubber	2 to 5
Polyisobutylene	5 to 20

and for adhesive **13''**, **33''** or **43''**:

	Parts
Compounded neoprene latex	5
Dihydromethyl abietate (sold commercially as Staybelite ester 10 by Hercules Powder Co.)	1

Adhesive **13'**, **33'** or **43'** is preferably transparent to provide legibility of indicia marked on the markable material. As another formula for the latter adhesive, we may use:

	Pounds
Crepe natural rubber	40
Staybelite Ester 10	40
Lanolin oil	10
Alkylated polyhydric phenol	½

The article of the invention, in several embodiments, is preferably made in the form of a strip or web of continuous or indefinite length which is then cut transversely at spaced apart intervals to provide units suitable for use in accordance with the description herein. Furthermore, transverse cuts or scores may be provided, at intervals, which do not extend completely across the article and therefore do not sever the web but permit the user to easily tear across the web to sever individual portions. We prefer not to provide the article in other than the form of a continuous strip or strip portions torn or cut from such a strip.

To use the article, the markable material is inscribed with indicia as a first step and then protective strip **16**, **36**, or **46** is removed and the article of the invention is pressed against the surface of an article (such as one to be labeled) to attach the two (as label **11** is attached to article **20**) by means of adhesive **13**, **33**, or **43**, as a second step. The first and second steps may be reversed. As a third step, strip **15**, **35**, or **45** is removed and film **14**, **34**, or **44** is folded over and pressed against the markable material to adhere it to the markable material by adhesive **13'**, **33'**, or **43'**. Alternatively, the third step

may be carried out after the first step but before the second step.

In another non-preferred embodiment of the invention, one adhesive composition can operably be used if permanent affixation of the protective transparent cover to the legible face of the markable paper is acceptable.

Labels in accordance with this invention may be constructed with markable materials of transparent, translucent, or opaque markable materials which comprise film, foil, or fabric; the markable materials may be colored or uncolored and should be enabled to be marked by being printed, typewritten, or manually written upon with pencil or ink.

In the embodiment of FIGURE 4, a single film (which may suitably be marked upon) may quite suitably be used in place of the two films 42 and 43 joined with adhesive 48.

The configuration of the labels may be as shown in FIGURES 1 and 4 or may be of other configurations such as that of a markable strip with two or more adjacent transparent portions which are foldable over onto the strip. The markable portion of the label and the protective covering portion of the label may each be composed of a single material of either one ply or multi-ply construction. Heat sealable adhesives or films may be used partially or entirely in place of pressure sensitive adhesives. Such materials as polyethylene or a polyethylene and polyester laminate provide satisfactory materials for use by heat sealing.

While certain modifications and embodiments of the invention have been described, it is of course to be understood that there are a great number of variations which will suggest themselves to anyone familiar with the subject matter thereof and it is to be distinctly understood that this invention should not be limited except by such limitations as are clearly imposed in the appended claims.

We claim:

1. An article of the type described comprising in combination a flexible web of graphically inscribable material, a web of transparent flexible, foldable material, each of said webs having two faces, one of the faces of each of said webs of material being disposed in mutually partially overlapping mating relationship a coating of adhesive material completely covering one of the faces of said webs, which faces are opposite to said mating faces of said webs, two layers of strippable material relatively weakly adhered to each of said adhesives coated on the face of each of said webs, covering exposed portions of said adhesive coating, the flexible web of transparent material being joined to the web of graphically inscribable material in the area of overlap between said mating faces by an adhesive.

2. An article of the type described comprising in combination a flexible web of graphically inscribable material, a web of transparent flexible foldable material, each of said webs having two faces, one of the faces of each of said webs disposed in mutually partially overlapping mating relationship, the overlapping mating of each of said webs united by means of a layer of adhesive, the other faces of said webs being coated each with a layer of adhesive covering the entire exposed face portion of each of said webs, said layers covering the entire portion of the faces of the webs being of unequal tenacity, the adhesive layer coating the entire face of the transparent web being of less tenacity than the layer coating the entire face of the inscribable web, webs of strippable material weakly adherent to said adhesive, said webs of strippable material covering exposed portions of said adhesive coating.

3. An article of the type described comprising in combination a flexible web of graphically inscribable material having an upper face and a lower face, a web of transparent flexible, foldable material having an upper face and a lower face, each of said webs of material being disposed in mutually overlapping mating relationship on an edge-adjacent face portion, an adhesive coating comprising three portions, one portion of greater tenacity coated on the overlapping edge portions of each of the mating faces of said graphically inscribable material and said transparent material, and the two other portions being of lesser tencity than said adhesive coated on the overlapping edge portions of each of said mating faces, each portion being coated on the entire exposed faces of the transparent material, and the graphically inscribable material, which faces are opposite to the overlapping faces of said webs, webs of strippable material, relatively weakly adherent to said adhesive, covering exposed portions of said adhesive coating.

4. An article of the type described comprising in combination a web of flexible graphically inscribable material having edges and an upper face and a lower face, a web of transparent flexible foldable material having edges and an upper face and a lower face, each of said webs of material having a portion of one of said faces adjacent to one edge of the web adhered to a like portion of the face of the other web, pressure sensitive adhesive of great tenacity on the lower face of said web of graphically inscribable material to adhere to the web to a solid surface, a coating of pressure sensitive adhesive of lesser tenacity entirely covering the exposed portions of the upper face of said web, webs of strippable material relatively weakly adherent to said adhesives and covering exposed portions of said adhesives.

5. An article of the type described comprising in combination a web of flexible graphically inscribable material having edges and an upper face and a lower face, a web of transparent flexible foldable material having edges and an upper face and a lower face, each of said webs of material having a portion of one of said faces adjacent to the upper edge of the web adhered to a like portion of the face of the other web, pressure sensitive adhesive of great tenacity on the lower face of said web of graphically inscribable material to adhere the web to a solid surface, a coating of pressure sensitive adhesive of lesser tenacity entirely covering the exposed portions of the upper face of said web, webs of strippable material relatively weakly adherent to said adhesives and covering exposed portions of said adhesives.

6. An article of the type described comprising in combination a web of flexible graphically inscribable material having edges and an upper face and a lower face, a web of transparent flexible foldable material having edges and an upper face and a lower face, each of said webs of material having a portion of one of said faces adjacent to the lower edge of the web adhered to a like portion of the face of the other web, pressure sensitive adhesive of great tenacity on the lower face of said web of graphically inscribable material to adhere the web to a solid surface, a coating of pressure sensitive adhesive of lesser tenacity entirely covering the exposed portions of the upper face of said web, webs of strippable material relatively weakly adherent to said adhesives and covering exposed portions of said adhesives.

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