

Aug. 18, 1953

E. B. BREWSTER

2,648,924

LABEL STRUCTURE

Filed Dec. 16, 1949

2 Sheets-Sheet 1

Fig. 1

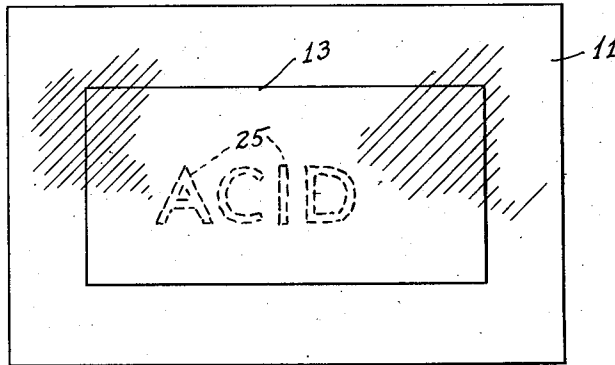


Fig. 2.

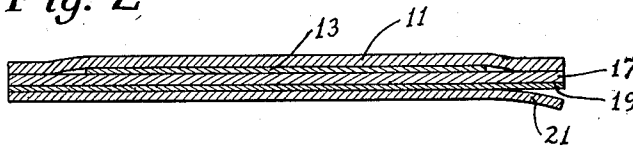


Fig. 3

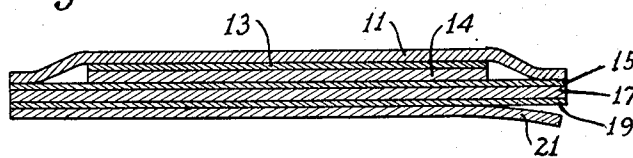


Fig. 4

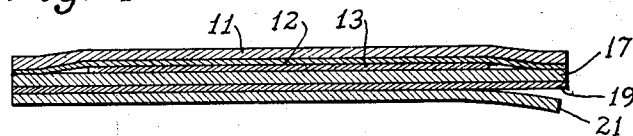
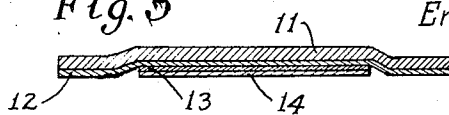


Fig. 5



INVENTOR.
Ernest Billings Brewster
BY  Charles Shepard
Attorney

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Fig. 6

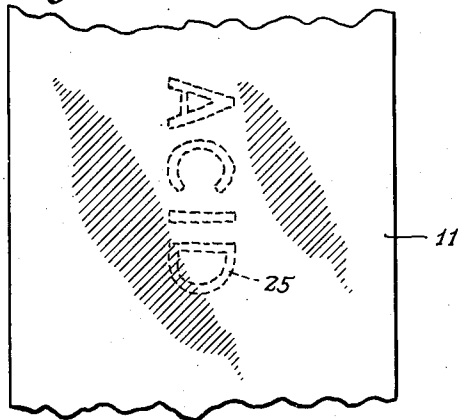


Fig. 7

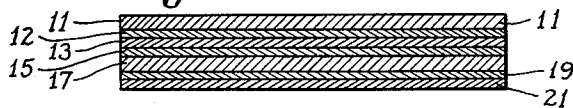


Fig. 8



INVENTOR
Ernest Billings Brewster
BY *Charles Shepard*
Attorney

UNITED STATES PATENT OFFICE

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LABEL STRUCTURE

Ernest Billings Brewster, Rochester, N. Y.

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6 Claims. (Cl. 40-2)

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This invention relates to a label structure, and particularly to an adhesive label intended for use on a wide variety of products.

An object of the invention is the provision of a generally improved and more satisfactory label structure, so constructed that the markings on the label are protected against becoming illegible, either by abrasion or by spillage of the contents of the container to which the label is affixed, or by dirt, oil, water, acid, heat, and weather.

Another object of the invention is the provision of a label structure so designed that the markings or indicia may be placed on the label either before or after the label is placed on the bottle or other article with which it is to be used, and so constructed that additional matter may be added at any time to the markings previously appearing on the label, notwithstanding the fact that the label is protected from abrasion, from spillage of contents of the container, and from dirt, oil, water, acid, heat, and weather.

A further object is the provision of a label structure of the kind indicated above, which can be manufactured easily and inexpensively, and which is suitable for use by inexperienced persons without requiring special equipment.

A still further object is the provision of a label structure which may be easily applied to any desired article, may be easily stripped off the article when no longer required, may be provided in long rolls so that any desired length of label may be cut or torn off the roll to provide a label of the proper length for any desired wording thereon, and may be provided in any variety of colors desired.

These and other desirable objects are accomplished by the construction disclosed as an illustrative embodiment of the invention in the following description and in the accompanying drawings forming a part thereof, in which:

Fig. 1 is a face view of a label in accordance with a preferred embodiment of the invention;

Fig. 2 is a diagrammatic cross section through the label in its preferred form;

Fig. 3 is a similar view of an alternative form;

Fig. 4 is a similar view of another alternative form;

Fig. 5 is a similar view of still another alternative form;

Fig. 6 is a face view of a label structure in accordance with a further modification of the invention;

Fig. 7 is a cross section through such structure; and

Fig. 8 is a similar section illustrating a still further modification.

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The same reference numerals throughout the several views indicate the same parts.

The label structure comprises, in general, an outer covering 11 of transparent or at least translucent material, and under this covering a layer of coating material 13 which (as more fully explained below) is adapted to produce a visible mark upon the application of pressure to the transparent or translucent outer surface coating 11. The outer covering layer 11 and the pressure-sensitive marking material 13 are both carried, directly or indirectly (in the preferred form of the invention) by a base sheet 17 having on its rear face an adhesive coating 19 of a character adapted to stick to the bottle, box, or other container or article on which the label is to be used. Frequently the adhesive coating 19 may be left unprotected until ready for use, but it is often desired to protect this covering (particularly when it is a pressure-sensitive adhesive rather than a moistening type adhesive) and such protection may be furnished by a protecting layer 21 of paper, fabric, or other suitable sheeting, which is intended to be peeled off of the adhesive layer 19 (as indicated diagrammatically at the right hand end of Figs. 2-4) just before the label is applied to the bottle or other article on which it is to be used.

As indicated in the drawings, the marking material layer 13 is preferably of slightly smaller size than the transparent cover layer 11 or the base sheet 17, at least in the width dimension, so that both of the layers 11 and 17 may project at their margins beyond at least the side edges of the material 13, as shown, in order to seal the material 13 at least along the two lateral edges or preferably completely around all edges, to prevent contact of this material 13 with medicines, chemicals, or other liquids which might spill onto the label.

The pressure-sensitive marking layer 13 is preferably a layer of crystalline waxy material, such as disclosed, for example, in United States Patent 1,783,442, granted December 2, 1930, on the application of C. W. Mayer and E. F. Siller. Waxy coatings and similar coatings of this type are well known and are available on the market. A characteristic of such coating is that when concentrated pressure is applied over a limited area, such as by the point of a pencil or stylus, the coating is changed or disintegrated in such a way as to expose the color of the base sheet on which the coating is placed, which base sheet is of a contrasting color to that of the coating itself, but is masked initially by the coating. Hence the pressure applied in writing a word will cause

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the word to appear in the color of the backing sheet beneath the coating, while the rest of the area of the coating remains undisturbed and is of some other color, usually white or light colored.

The pressure-sensitive marking layer 13 may be a carbon layer the same as or similar to the surface of a sheet of ordinary carbon paper used in making carbon copies. In the case of a carbon layer, however, writing is rendered visible not by disintegrating or changing the character of the carbon layer, but by causing tiny particles of the carbon layer to adhere, by pressure, to another sheet in contact therewith. The carbon particles do not adhere readily to some of the very smooth surfaced transparent sheets which might be used for the covering layer 11, and consequently, if a carbon layer is used at 13, then the coating 11 should have its under surface somewhat rough, of the general character of ground glass, so that when writing pressure is applied to the top face of the layer 11, the carbon particles from the layer 13 will adhere, where pressure is applied, to the roughened or mottled under surface of the layer 11, and thus the markings or indications will be visible through the sheet 11, which may here be described as a translucent sheet rather than a truly transparent one. Such a translucent sheet is available on the market under the name matte acetate sheeting, manufactured by Eastman Kodak Company. It is preferred, however, to make the layer 13 of the waxy character above mentioned, because if this is done, the surface layer 11 may be smooth and perfectly transparent, without requiring the roughening which is needed in order to make the markings visible when a carbon layer is used.

Regardless of whether it be a carbon layer or the preferred waxy coating, the layer 13 in either case is preferably formed in situ on the base sheet or layer 17, as indicated in Figs. 2 and 4. When thus placed directly on the base sheet 17, no special layer of adhesive is necessary in order to hold the layer 13, since the waxy layer or carbon layer can be made to adhere directly to the base sheet 17 by techniques well known in the art.

Instead of forming the pressure-sensitive marking layer 13 directly on the base sheet 17, as in Figs. 2 and 4, it is also possible, if desired, to use a marking layer 13 which has previously been formed on its own supporting sheet 14, as shown in Fig. 3. For example, the parts 13, 14 could be a sheet of ordinary carbon paper with the carbon face uppermost, the layer 13 being the carbon deposit and the layer 14 being the paper backing. Or again, these parts 13, 14 could be a piece of the above-mentioned waxy-coated paper of the kind available on the market, the paper being represented by the layer 14 and the waxy coating by the layer 13. In either case, where a marking layer previously mounted on its own base sheet is used, it is desirable to provide the upper surface of the label base layer 17 with an adhesive layer 15 in order to hold the base layer 14 of the marking material, and this arrangement is specifically indicated in Fig. 3.

Just as the marking coating 13 may be formed in situ directly on the main base layer 17 or may be previously placed on its own base 14 which is later secured to the main base 17, so also the outer covering layer 11 of transparent or translucent material may be formed in situ on the rest of the label structure (as in Figs. 2 and 3) or it may constitute a previously formed sheet, in which event its under surface may be provided with an adhesive layer 12 (Fig. 4) to fasten the

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covering layer 11 to the various underlying layers, or the marking layer 13 may itself be of a tacky or adhesive character. It is ordinarily preferred to form the outer covering layer directly in situ, on the other underlying layers, by applying to the underlying layers a fluid coating which, upon drying or upon evaporation of solvents, will form the desired transparent or translucent covering layer 11. Very satisfactory results are obtained, however, by the alternative construction of using a sheet of ordinary transparent plastic sheeting of a kind readily obtainable on the market, such as cellophane sheeting, with its under surface coated with the adhesive 12 as indicated in Fig. 4, to stick the sheet 11 to the underlying structure.

The invention is not intended to be limited to any particular form of transparent coating 11 forming the outer surface of the structure, since many forms of coatings available for this purpose are well known in the general coating industry. For example, it may be a resinous coating applied in hot melted condition, so long as the degree of heat of the coating when applied is not so high as to affect adversely the underlying waxy layer or carbon layer 13. As examples of resins which may be applied in hot melted condition, there may be mentioned polyethylene, and cellulose acetate, and ethyl cellulose.

Again, the outer layer 11 may be applied as a solution coating, taking care that the solvent employed is of a character which will not adversely affect the waxy layer 13 (or the carbon layer, if this is used in place of the waxy layer). There are a great many materials, well known in the coating industry, which can be applied as solutions, and which, upon evaporation of the solvent and drying, will form suitable transparent or translucent films adhering tenaciously to the underlying layers. For example, there may be used a copolymer of polyvinyl chloride acetate, or of cellulose nitrate or cellulose acetate, or a copolymer of methyl methacrylate, to mention only a few of the materials which are well understood in the coating field.

The main base sheet of the label structure, indicated at 17, may be of any suitable sheet material which has the necessary mechanical strength to form the body of the label structure and which is of such a character that the various adjacent adhesive layers, waxy layer, etc., will stick to it with sufficient tenacity. A sheet of paper or a sheet of cloth fabric is suitable for this purpose, or a sheet of cellulosic or other plastic sheeting material, such as cellophane, in either transparent or (preferably) opaque form. Where the marking coating 13 is formed on its own separate base 14, as in Fig. 3, the main label base 17 may conveniently be a piece of double adhesive coated cellophane or the like, such double coated cellophane (coated on both sides with adhesive 15 and 19) being available on the market. Where the waxy coating or carbon coating 13 is not formed on its own separate base 14 but is to be formed in situ, directly on the base layer 17, then it is preferable not to employ cellophane sheeting for this base layer unless it is first specially treated to receive the waxy or carbon coating, because the waxy coating or carbon coating does not adhere readily to ordinary smooth-surface cellophane. But it will adhere readily to paper or to finely woven cloth. And it will adhere also to cellophane sheeting if the cellophane is specially treated, in known manner, so as to receive and retain the waxy or carbon coating. The waxy layer 13 may also be

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applied as a coating to the under side of the adhesive layer 12 (Fig. 4), and in that event the adhesive will somewhat penetrate and mix with the waxy material, giving the latter enough thickness or adhesion so that it will stick sufficiently to the underlying layer 17 when the latter is brought into contact with the previously assembled layers 11, 12, and 13.

The protecting layer 21, if employed, may be of any suitable material, as already indicated, and will be peeled or stripped off immediately prior to use.

In use, a pencil or stylus is employed to mark any desired indications or lettering on the label, as indicated at 25 in Fig. 1, and this is done either before or after the label is placed on the bottle, box, wire, or other article on which it is to be used. The label structure may also be placed in a typewriter and the desired indications may be typed upon it. In any case, whether using a pencil or a stylus or a typewriter, the writing pressure will destroy or disintegrate the waxy coating 13 so that the contrasting color of the underlying sheet 17 (or 14) is visible along the lines where pressure was applied, or if a carbon coating rather than a waxy coating was used, the writing pressure will cause tiny particles of carbon to adhere to the under surface of the overlying translucent covering 11 (or the adhesive 12 thereon), so that the writing or indications become visible. Yet these indications are well protected by the overlying sheet 11, so that neither medicines nor chemicals nor grease, oil, weak acid, nor other usual forms of dirt, if spilled on the label, will destroy the legend, but may be wiped off with a damp cloth without damage to the label. If it is desired to add a further legend to the label after the label has been applied to the marked article, this may still be done. If it is desired to mark a wire or cable, one end of the label is wrapped around the wire or cable and is doubled back upon itself.

A simplified form of structure, which may be manufactured more economically and which, accordingly, is preferred where expense is a primary consideration to the user, is illustrated in Fig. 5. Here, the layers are identified by the same numerals used in the other views. It is seen that the layer 17, which constituted the main base or body layer in the previous embodiments, has been entirely omitted in this embodiment of Fig. 5, and now the transparent layer 11 (conveniently a sheet of cellophane) may be considered as the main body of the structure, although the layer 14 could also be called the base sheet, if desired. It is coated on its under surface with the pressure-sensitive adhesive layer 12. The waxy or other pressure-sensitive marking layer 13, previously formed on its own base 14 of paper or other suitable sheet material, is somewhat narrower than the sheet 11, which thus projects beyond the layers 13, 14 at both lateral edges. Thus the adhesive layer 12 serves the dual purpose of holding the layers 13, 14 to the body sheet 11 (in the central part of the strip) and affixing the structure to the article which is to be marked or labeled, such affixing being, of course, only along the marginal edges of the structure, where the adhesive 12 projects laterally beyond the layers 13, 14. This simplified form of Fig. 5 is very economical to manufacture, although it does not have in full degree all of the advantages of the forms previously described.

It will be noted that in the forms of construc-

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tion illustrated in Figs. 2, 3, and 5, the label structure is thicker at its center than at its marginal edges. For many purposes, this is entirely satisfactory. When the label structure is manufactured in long strips and is supplied to the user in rolls, however, the difference in thickness between the center and the edges of the strip will cause the strip to wrinkle somewhat when it is rolled. While this is not seriously objectionable in the use of the product, and while many or all of the wrinkles will flatten out again as the strip is unrolled from the roll, yet it does detract from the neat appearance and visual sales appeal of the product when offered to the prospective user in roll form. Hence it is desirable to have a form of label structure which is of approximately uniform thickness throughout its entire width, and which, accordingly, can be formed into a roll smoothly and without wrinkles. Such a structure is provided in the form of construction shown in Fig. 4, where the waxy layer 13, even though it does not extend all the way to the edges, is of such insubstantial thickness that its absence at the edges does not interfere with smooth or wrinkle-free rolling of the structure. Still other forms of structure capable of smooth rolling will now be described with reference to Figs. 6 and 8, inclusive.

Referring first to Figs. 6 and 7, the label structure in this form is made in a long strip, the lateral edges of which are parallel to each other as indicated in Fig. 6, the strip being of any desired length and being adapted, upon manufacture, to be rolled into a roll for delivery to the customer or user in that condition, just as adhesive coated tape is ordinarily furnished to the customer in roll form. The structure comprises several layers, all the layers having substantial thickness being of equal width, as seen in Fig. 7, so that there is no substantial variation in thickness at any point throughout the width of the structure; hence it will roll evenly and smoothly.

The top layer is the transparent or at least translucent covering layer which, as in the embodiments previously described, is again indicated by the numeral 11. The pressure-sensitive marking layer is indicated, as before, at 13, and is preferably of the same waxy character previously mentioned. Below this marking layer 13 is a sheet 17 of a color contrasting strongly with the color of the waxy layer 13. For example, if the waxy layer 13 is of the usual white color, the sheet 17 may be of any deeply colored hue, such as red or blue or green or brown or black. Preferably this sheet 17 is made of suitably colored acetate sheeting, either transparent or translucent or opaque, and the top protecting layer is preferably made of uncolored transparent acetate sheeting, although other materials may be used as already above indicated in the previous discussion of the corresponding layers 11 and 17 of the previously described embodiments of the invention. In any event, the top protecting layer 11 is transparent or translucent, so that the legend 25 written on the label may be read through this layer 11. It is not necessary or even desirable, however, that the layer 17 be transparent or translucent. Although acetate sheeting of a colored transparent or translucent character is suitable and convenient for this layer 17, it is desirable to use opaque or nearly opaque acetate sheeting, and it is equally possible to use paper, cloth, or other flexible sheet material which is opaque in character.

There is indicated at 12 a layer of suitable

adhesive interposed between the transparent covering layer 11 and the pressure-sensitive waxy layer 13 in order to secure these layers to each other, and another adhesive layer 15 beneath the waxy layer 13 secures it to the sheet 17. On the bottom of the sheet 17 is another adhesive layer 19, preferably of a pressure-sensitive type rather than a moistening type adhesive (although the latter may be used) for the purpose of causing the entire label structure to adhere to the article which is to be marked. Just as in the embodiments previously described, this bottom adhesive layer 19 may, if desired, be initially covered by a protecting layer 21 which is to be peeled or stripped off just before the label is used, although in most cases such a protecting layer 21 is unnecessary. For more secure fastening of the lateral edges of the layers 11 and 17 to each other, the waxy layer 13 may be stopped a little short of the lateral edges of the structure, as was done in Fig. 4. This will not interfere with smooth rolling.

Referring now to Fig. 8, there is here shown an embodiment of the invention which is very similar to that illustrated in Fig. 7, the difference being that here in Fig. 8 the layer 13 is of the above mentioned waxy material mixed with adhesive material so that this pressure-sensitive marking layer 13 is itself of an adhesive character and adheres both to the upper covering layer 11 and to the underlying sheet 17, thus rendering unnecessary the two separate adhesive layers 12 and 15, which are here omitted. Except in this respect above mentioned, the structure of Fig. 8 is otherwise the same as in Fig. 7.

It is found in practice that various adhesives may be mixed with the waxy material without destroying the character or functioning of the waxy material. Among such adhesives suitable for this purpose may be mentioned the adhesive commonly known as a rubber base or latex adhesive, and also common or conventional animal glue. Either of these adhesives, when mixed with the waxy material, will impart to the mixture sufficient adhesive power for holding the layers 11 and 17 together, and at the same time the waxy mixture will still be pressure-sensitive so that it will be altered or disintegrated by pressure of the writing instrument or implement to a sufficient extent to show the underlying sheet 17 through the waxy layer in those areas where writing pressure has been applied, while the waxy layer continues to cover or mask the underlying sheet 17 in those areas where no writing pressure was applied. Thus in these forms of the invention (Figs. 7 and 8) as well as in the other forms previously described, it may be said that the waxy coating initially masks or hides the underlying sheet, and disintegrates or alters under the influence of writing pressure so that the underlying sheet becomes visible along the pressure lines of the writing strokes, as indicated by the exemplary legend 25 in Fig. 6.

In all of the sectional views, Figs. 2-5, 7, and 8, the thickness of the various layers is greatly exaggerated for the sake of clarity.

It is seen from the foregoing disclosure that the above-mentioned objects of the invention are admirably fulfilled. It is to be understood that the foregoing disclosure is given by way of illustrative example only, rather than by way of limitation, and that without departing from the invention, the details may be varied within the scope of the appended claims.

What is claimed is:

1. A label structure including a non-opaque outer covering, an underlying base sheet, and a pressure-sensitive marking layer interposed between said outer covering and said base sheet, said pressure-sensitive layer being a waxy coating of contrasting color to and initially masking an underlying sheet and being changed by pressure of writing strokes to render the contrasting color of the underlying sheet visible through the pressure-sensitive layer along the lines of the writing strokes, said outer covering and said underlying base sheet being permanently adhesively secured to each other along at least two opposite edges of the label structure and being intended to remain in fixed relation to each other, without separation, during all normal use.

2. A construction as described in claim 1, in which said outer covering is substantially transparent.

3. A construction as described in claim 1, in which said base sheet has an adhesive coating on its rear surface, for attachment of said label structure to another article.

4. A construction as described in claim 1, in which said outer covering and said base sheet both project laterally beyond the edge of said marking layer.

5. A construction as described in claim 1, in which said outer covering is a substantially transparent sheet wider than said waxy coating and having an adhesive coating on its lower surface to secure said covering sheet to said waxy coating throughout their common areas and to provide exposed adhesive areas extending laterally beyond the waxy coating for securing the outer covering direct to the base sheet.

6. A construction as described in claim 1, in which said label structure is in the form of a long narrow strip of substantially uniform thickness throughout the width of the strip so that the strip may be formed into a roll without substantial wrinkling.

ERNEST BILLINGS BREWSTER.

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