July 11, 1961 W. J. LUTWACK 2,992,153

METHOD OF MAKING PROTECTIVE BOOK COVER

Filed July 19, 1957

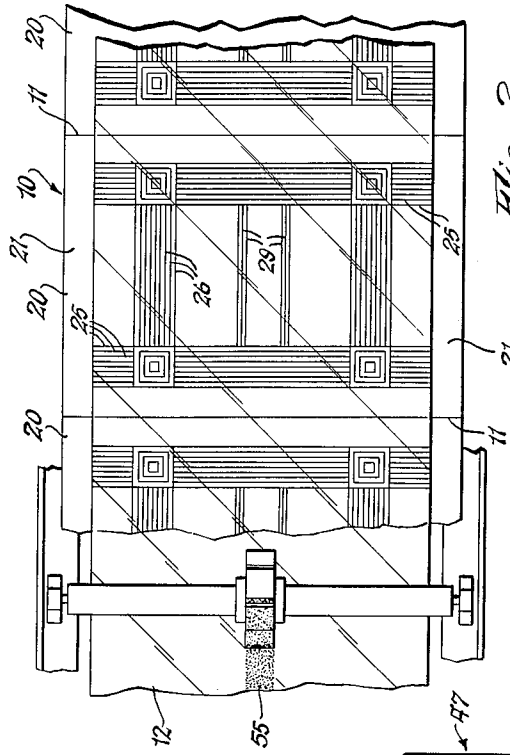


Fig. 2.

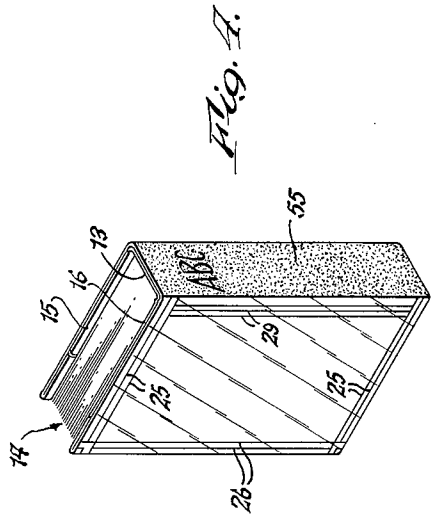


Fig. 4.

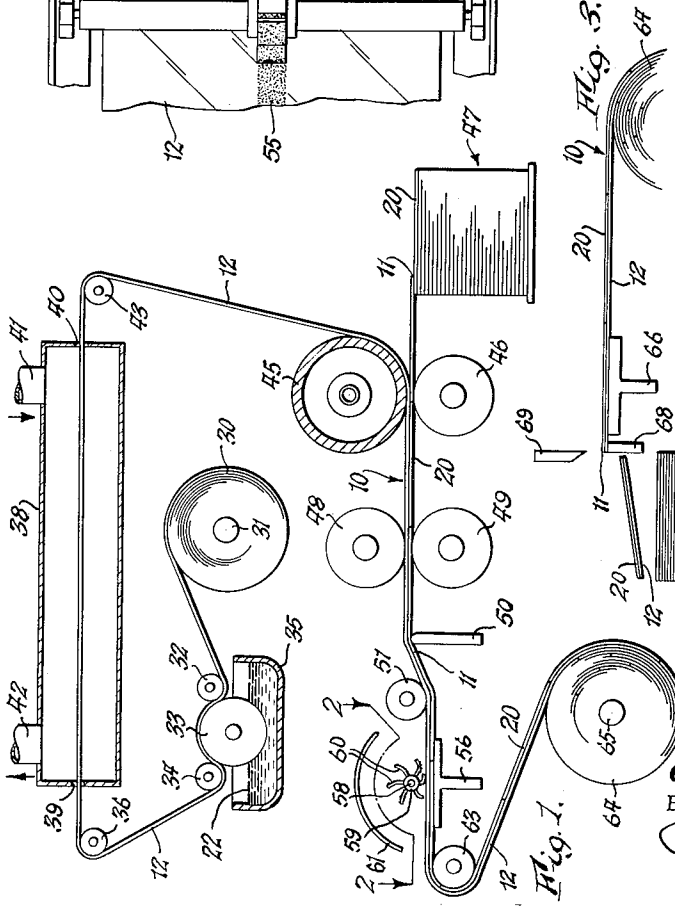


Fig. 3.

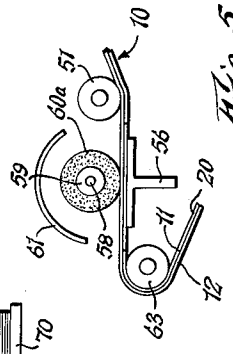


Fig. 5.

Fig. 1.

INVENTOR.
Wilton J. Lutwack
BY
Popp and Sommer
ATTORNEYS.

United States Patent Office 2,992,153 Patented July 11, 1961

2,992,153

METHOD OF MAKING PROTECTIVE BOOK COVER

Wilton J. Lutwack, 701 Seneca St., Buffalo, N.Y.

Filed July 19, 1957, Ser. No. 673,015
3 Claims. (Cl. 154—125)

This invention relates to a method of making a protective book cover and more particularly to a book cover of the sheet type adapted to be folded around the covers and backs of books for the protection thereof, and which includes an outer clearly transparent layer, lamina or sheet made of plastic and which is smooth and glossy, has a high tear strength and is highly resistive to moisture, scuffing and abrasion and another layer, lamina or sheet of high quality paper having high tear and burst strength and minimum hygroscopicity and on which can be printed school or fraternal insignia and advertisements as well as guide lines for facilitating the application of the cover to different sized books.

One of the principal objects of the present invention is to provide such a book cover having an adequate but limited external area of the outer clearly transparent smooth and glossy layer or sheet treated to accept and retain ink, dye, pencil and other markings so that the owner of the book can inscribe his name or any other data on this area with the use of any conveniently available writing instrument and having the permanence normally provided by such instrument.

Another object is to provide such area without destroying the tear strength and resistivity to moisture, scuffing and abrasion of the outer sheet at the area.

Another object is to provide such a limited writing area upon the outer transparent smooth and glossy lamina or sheet of the book cover from which any marks can be cleanly erased with the use of erasing materials normally used for the particular marking present on the area.

Another object is to provide this writable area along that portion of the book cover which extends across the back of the book and which extends from one edge of the smooth and glossy transparent layer or lamina to the opposite edge thereof so that the full distance which the cover extends along the back of the book is available for writing and so that infolded edge portions of the cover can also be marked to provide a concealed or secret place to apply ownership markings and the like.

Another object is to provide such a method of making a protective book cover which employs conventional applying and curing techniques for the adhesive and sheet materials used and is at the same time adapted for the continuous production of protective book covers with a minimum of supervision and with a minimum of imperfect copies likely to be produced.

Another object is to provide such a process by which such protective book covers with windows containing a writable surface can be produced by a rapid continuous process and at low cost.

Other objects and advantages of the invention will be apparent from the following description and drawings in which:

FIG. 1 is a diagrammatic vertical section through apparatus designed to carry out the process forming the subject of the present invention.

FIG. 2 is an enlarged fragmentary top plan view of the part of the apparatus as viewed generally from line 2—2, FIG. 1.

FIG. 3 is a side elevational view of a cutting table for cutting the normalized composite paper and plastic strip into lengths to complete the book covers.

FIG. 4 is a perspective view of a book protected by a book cover embodying the present invention and having a marking written thereon.

FIG. 5 is a fragmentary view similar to FIG. 1 showing a modified form apparatus for carrying out the invention.

The product of the present invention is a laminated or multi-ply foldable and creasable protective book cover in the form of a sheet cut from a composite strip **10** along the edges **11** of its paper components to produce the finished product which has a rectangular outer layer or lamina **12** which is clearly transparent, smooth and glossy and which extends as a single layer to cover the back binding **13** of a book **14** as well as to fold around the rim portions of the front and rear covers **15**, **16** of the book. The book cover includes a rectangular inner layer or lamina **20** of high quality paper having high tear and burst strength and minimum hygroscopicity and which will accept printing on the face which is laminated to the transparent outer layer or lamina **12**. Such printing can be school emblems or the like as well as advertising and such printing also preferably includes guide lines, hereinafter described, used in applying the cover to the book. The outer and inner laminae **12**, **20** of each book cover are coextensive in the direction along the back binding of the book both terminating at and being provided by cutting the outer lamina **12** along the abutting edges **11** of the paper sheets **20** applied to the outer lamina. However, in the laminated book cover shown the transparent outer layer **12** is stopped short of the right and left hand of the laminated cover so as to leave an extension **21** of the inner paper layer or lamina **20** exposed at each right and left hand extremity of the laminated cover both to permit of ready writing on a paper exposure and also to provide a better grip of the laminated cover on the book. In addition to the quality of transparency and glossiness, the exterior surface of the outer lamina or layer **12** is highly resistive to the effects of moisture, including perspiration as well as rain and is also highly resistive to scuffing and abrasion. It should also be stable under many temperature conditions and have a high degree of toughness or tear strength as well as sufficient flexibility to be readily manually folded upon itself and manually creased in applying the protective laminated cover to a book. To meet the above requirements I have found that an 88 gage film or layer of cellulose acetate with plasticizers to have the requisite pliability has been satisfactory.

This outer layer or lamina **12** is adhered to the successive inner paper sheets **20** by a layer of adhesive **22**. The paper layer or lamina **20** of each book cover is preferably a high finish, tub-sized, 65 pound, moderate soft, bleached, white sulphate and sulphite paper in the order of .005 inch thick paper.

To facilitate folding the protective book cover around different sized books, guide lines are printed on the face of the inner paper layer or lamina **20** of each book cover and which guide lines are visible through the outer transparent layer or lamina **12**. These guide lines are shown as comprising an upper and lower series of parallel spaced lines **25** adjacent and parallel with the opposite longitudinal edges **11** of the book cover, and another series of parallel lines **26** close to and parallel with the opposite left and right hand edges of the book cover. At the cross-overs of the lines **25** and **26** these lines can be formed into squares, as shown, each side of which squares forms a continuation of a corresponding guide line. For appearance and also centering the cover on the book, two additional groups of lines **29** are provided in spaced relation to each other at the center of the book cover and parallel with the lines **26**.

The adhesive **22** is applied to one face of the outer transparent layer **12** while this outer layer is still in the

form of a long sheet or strip. This outer layer or strip **12** is supplied from an unwind roll **30** on a shaft **31** which can be rotatably mounted in any suitable manner (not shown). The width of the strip **12** on this unwind roll **30** is equal to the width, from right to left, of the finished book covers less the paper extensions **21** thereof and from this unwind roll the strip **12** is fed under a hold-down roll **32** and over the upper surface of a glue roll **33** and thence under another hold-down roll **34**, these rolls rotating with the strip **12** passing among them. The glue roll **33** dips into the body of adhesive **22** shown as contained within a tank **35**. The adhesive used is, of course, transparent in its final state and can be a polyvinyl aceate modified with either alkyd resins or plasticizers such as esters of phthalic acid or both. The glue roll **33** picks up a layer of this adhesive and applies it to the underside of the strip **12** of transparent cellulose acetate passing over and in contact with this glue roll.

From the hold-down roll **34** the continuous strip of transparent cellulose acetate **12** is shown as passing upwardly and over a roll **36** which feeds the strip **12** horizontally into a drying tunnel **38**. This drying tunnel is shown as being in the form of a horizontally elongated rectangular enclosure having an inlet opening **39** at the end thereof adjacent the feed roller **36** and having an opposite outlet opening **40**. The enclosure **38** is provided with an air inlet **41** at one end and an air outlet **42** at its opposite end. The air supplied to the drying tunnel **38** through the inlet **39** is preferably heated to a temperature of from 180° F. to 200° F. and the line of travel through the tunnel **38** is sufficient to properly condition the adhesive **22** on the acetate strip **12** for heat application to the sheets of paper **20**.

From the outlet opening **40** the strip **12** of cellulose acetate passes around a roller **43** and thence downwardly and around the underside of an internally heated metal roll **45** which cooperates with a resilient pressure roller **46** arranged thereunder. This resilient pressure roller is preferably made of rubber or the like and is arranged directly below the heating roll **45** and parallel therewith. These rolls **45, 46** are rotated at the same peripheral speed as the rate of travel of the strip **12** of cellulose acetate and the sheets **20** of paper are fed from a pile **47** with their printed sides up, into the bite of the rolls **45, 46** with their edges **11** in edge-to-edge relation so that the successive sheets **20** of paper provide a continuous procession of sheets the printed faces of which are brought into contact with the adhesive **22** on the transparent strip **12** and the reverse faces of which are brought into contact with the resilient pressure roller **46**. In passing between the rolls **45, 46** the successive pieces of paper **20** in edge-to-edge procession are pressed into contact with the adhesive **22** on the transparent strip **12** so as to be reliably adhered thereto.

From the rolls **45, 46** the composite strip so formed passes between a pair of resilient pressure rollers **48, 49** and thence the composite roll passes over the rounding upper edge of a board or stationary vertical wall **50** and thence downwardly and under a roller **51**.

The feature of the invention resides in the abrading of a stripe **55** on the glossy exposed face of the plastic strip **12** to have a tooth which will accept the retain markings made by conventional pens and pencils, such as the markings from pencils and crayons, ink from pens and dyes from ball point pens. Desirably this stripe extends along the back of the book to which the protective cover is applied and from one edge of the cover to the opposite edge thereof so that the full area of cover which overlays the back of the book is available for inscribing the student's name, the book title, class or any other data and in addition so that the student can apply a concealed or secret marking on the underfolded top or bottom of the book cover to enable identification of stolen property.

This stripe **55** is applied from a fixed zone to the moving composite strip **12, 20** and preferably continuously along the entire center of the composite strip. For this purpose, the composite strip **12, 20** from the roll **51** passes with its transparent glossy cellulose acetate plastic lamina or strip **12** up, onto a table **56**. Above this table and the composite strip **12, 20** passing thereover is a rotating shaft **58** carrying, at the center of the composite strip, a fixed hub **59** provided with flails **60**. These flails are preferably made of a fine grain sandpaper or emery cloth and the rotation of the shaft **58** is such that the abrasive sides of the flails **60** are brought violently into contact with the center of the passing composite strip **12, 20** so as to produce the narrow stripe **55** in the glossy face of the plastic sheet **12** having the proper tooth to accept and retain markings. The width of the flails determines the width of the stripe **55**, this preferably being the distance between the two series of lines **29** at the center of the book cover so that the writable stripe **55** registers with the space between these lines and extends the full extent along the back of the covered book.

A guard **61** is shown as arranged over the flails **60** to protect the operator and after the stripe **55** has been abraded in the composite strip, the composite strip is passed around a roller **63** and then wound up on a wind-up roll **64** on a shaft **65**. The composite strip is retained in this roll form **64** for the period necessary to normalize the laminae.

After normalization the composite strip **12, 20** as shown in FIG. 2, is unwound from the rewind roll **64** onto a cutting table **66** having a stationary cutting blade **68** along its far edge. A movable cutting blade **69** is brought down into cooperative relation with the fixed cutting blade **68** each time the abutting edges **11** of the successive sheets of paper **20** come into the line of cut. Since the toothed stripe **55** is continuous and the composite sheet **12, 20** is cut along the abutting edges of the paper sheets **20**, it will be seen that the book cover comprises a generally rectangular outer sheet **12** of clearly transparent flexible plastic having generally parallel upper and lower edges coincident with the upper and lower edges **11, 11** of the paper sheet **20**, the layer of adhesive **22** uniting these sheets into face-to-face relation, and with a part of the area of the outer face of the outer sheet **20** having teeth to form a parallel sided stripe **55** extending perpendicular to the edges **11, 11** and from one of these edges to the other and capable of retaining marks applied thereto and the balance of this area being smooth, glossy and transparent to visually expose the printing on the paper sheet **20** therebelow.

The completed book covers fall onto a table **70** on which they build up into a pile **71**.

In lieu of the flails **60**, a solid rubber wheel **60*a*** impregnated with abrasive grains can be mounted on the hub **59** as shown in FIG. 5. It will be seen that the operation of this form of the invention is the same as with the flails **60** which essentially involves moving a long strip **12** of glossy transparent flexible sheet plastic longitudinally, progressively adhering paper **20** to one side thereof, abrading from a fixed station a limited central area of the exposed glossy face of the plastic strip **12** to provide a toothed stripe **55** running lengthwise of the line of movement of the plastic strip **12**, and thereafter cutting the composite strip into lengths along the edges **11**.

In applying the book cover to the book **14** as illustrated in FIGURE 4, the book is placed upon the book cover on one end of the border design and centered between the lines **25, 25**. The two lines **25** beyond the upper and lower edges of the book are marked by the student. These marked lines are then each creased and the upper and lower parts folded in to provide a cover slightly larger than the book and it will be noted that in so folding in the upper and lower parts of the book cover along the crease lines two portions of the writable surface or stripe

55 are folded so as to be on the inside of the book cover. At this time the student can inscribe his name or any other identification data and which will be subsequently concealed when the cover is applied to the book.

The back binding of the book is then placed between the center guide lines 29 and the free ends of the book cover are wrapped around the hard covers of the book and lightly crimped with one's thumbs. The protective book cover is then removed and again one extra space is allowed and the ends are creased and folded along the lines 26. One hard cover of the book is then slipped into the pocket so formed by creasing and folding along the lines 26 and the other hard cover of the book is slipped into the pocket provided at the opposite end. It will be noted that at this time the marking previously made upon the toothed stripe 55 by the student is concealed and is arranged against the back of the book. The student can now inscribe his name, class, the title of the book, or any other data on the exposed portion of the toothed stripe 55 which lies along the back binding of the book as shown in FIG. 4. This marking can be made with a pencil, pen or other conventional writing instrument and its durability will match the durability of the particular writing material used.

It will be seen that the method of the present invention produces at very low cost a high quality protective book cover having not only a large exposed writing surface but also a concealed writing surface available for secret identification marks.

I claim:

1. The method of making a protective book cover of the character described, which comprises arranging a succession of paper sheets in a row in edge-to-edge relation with one another, moving said row longitudinally progressively, adhering a long strip of glossy transparent flexible sheet plastic longitudinally to one face of said moving row of paper sheets, abrading from a fixed station a limited central area of the face of said moving strip of plastic opposite to that to which said paper sheets are applied thereby to provide a toothed stripe running lengthwise of the line of movement of said long strip, and thereafter cutting said long strip along the abutting edges of said paper sheets.

2. The method set forth in claim 1 wherein said abrading is continuous whereby said toothed stripe extends from one of said cut edges of each book cover to the opposite cut edge thereof.

3. The method of making a protective book cover of the character described, which comprises moving a long strip of glossy transparent flexible sheet plastic longitudinally, progressively adhering paper to one side of said moving strip of plastic, thereafter continuously abrading from a fixed station a limited central area of the face of said moving strip of plastic opposite the side to which said paper is applied thereby to provide a toothed stripe running lengthwise of the line of movement of said long strip and applied the full length of said long strip, and thereafter cutting said long strip into sections to provide book covers of the desired dimensions each having a toothed stripe running from one edge to the opposite edge thereof.

References Cited in the file of this patent

UNITED STATES PATENTS

548,216	Murray	Oct. 22, 1895
1,490,801	Collins	Apr. 15, 1924
2,325,584	Barnhart	Aug. 3, 1943
2,475,345	Williams	July 5, 1949
2,522,926	Brody	Sept. 19, 1950
2,556,825	Smith	June 12, 1951
2,565,868	Mann	Aug. 28, 1951
2,641,484	Brody	June 9, 1953