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2,831,706

BOOK OR DESK FILE AND COVERS

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FIG. 1

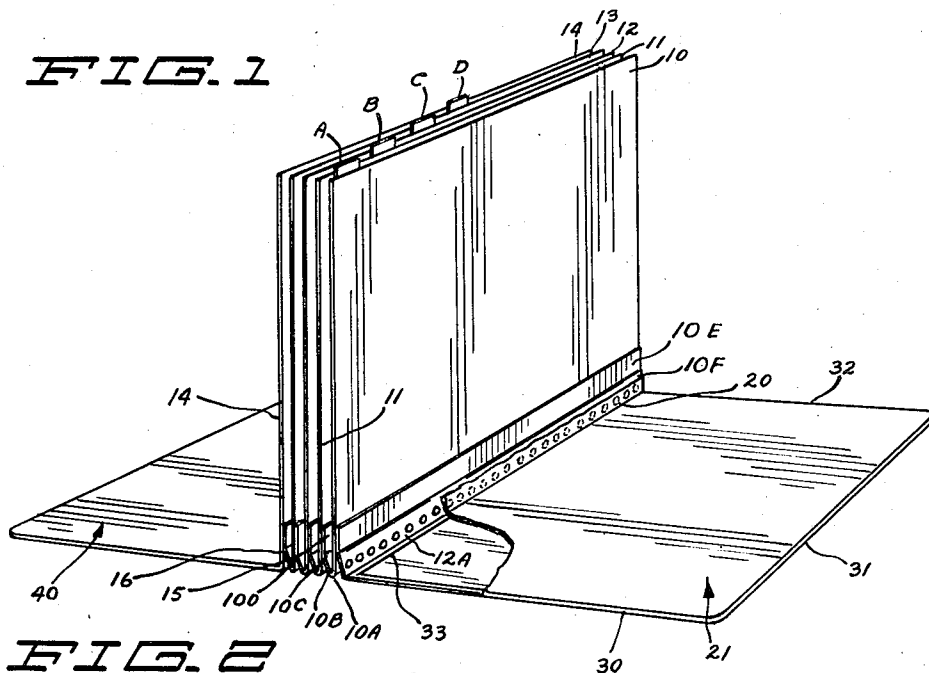


FIG. 2

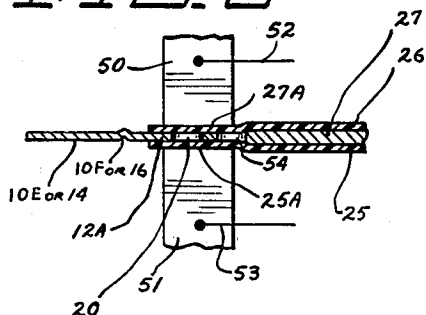


FIG. 4

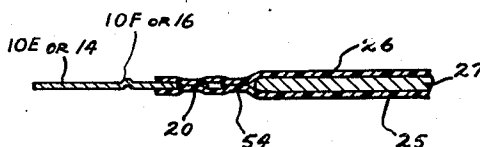
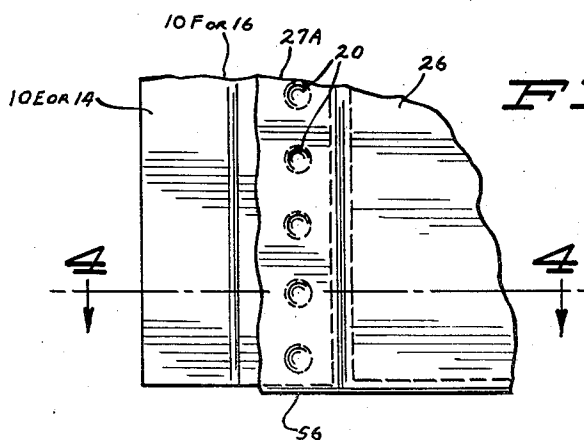


FIG. 3



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BOOK OR DESK FILE AND COVERS

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1 Claim. (Cl. 281—29)

This invention relates to books, desk files and the like and to methods of fabricating the same and more particularly to methods of forming the book together with a unitary cover for the protection and artful decoration of the book. There are presently available many fine plastic materials of beautiful colors and artful surface decoration suitable for use for many purposes. These materials, however, are subject to the disadvantage that they cannot be readily attached to paper, cardboard and the like, of which books are constructed. It is an object of the present invention to provide a method of book construction which may be used for the ordinary book, or for desk files and the like. It is a further object of the invention to provide a method of construction whereby the plastic materials may be attached generally to fibrous material such as paper, woven fabrics or the like. It is a further object of the invention to provide a method of fabrication for attachment of multiple plies of plastic material to an edge of paper or cardboard.

To the accomplishment of the foregoing and related ends, this invention then comprises the features hereinafter fully described and particularly pointed out in the claim, the following description setting forth in detail certain illustrative embodiments of the invention, these being indicative, however, of but a few of the various ways in which the principles of the invention may be employed.

The invention is illustrated with reference to the drawings in which Figure 1 is a perspective view of a book, which in this instance, may be a desk file.

Figure 2 is an enlarged fragmentary vertical sectional view thru an electric welding apparatus used in accordance with the present invention.

Figure 3 is a fragmentary planned sectional view of a portion of the cover and a portion of the next adjacent sheet or leaf to which the cover is attached.

Figure 4 is an enlarged fragmentary sectional view taken along the line and in the direction of arrows 4—4 of Figure 3.

Throughout the drawings corresponding numerals pertain to the same parts.

The particular book illustrated may be one of any kind desired, composed of one or more inner sheets or leaves, a front and back flyleaf and a cover. In the form illustrated the pages are provided with index tabs and the specific book illustrated is what may be designated as a desk file. It will be understood that the invention is of general applicability to books in general and for the fabrication of plastic sheets to fibrous material such as paper, woven material and the like, and therefore the particular use illustrated is merely illustrative of the invention and of the method by which it is utilized.

In the form shown in Figure 1 the book is composed of a plurality of sheets 10, 11, 12, 13 and 14. These sheets are of rectangular configuration and in the form shown are provided with index tabs A, B, C and D. A greater number of sheets may be used if desired. In the form illustrated, the sheets, which are of rectangular con-

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figuration, are provided with a backbend at 10A and a reversely extending portion 10B which is creased so as to be bendable at 10C and to provide an attachment area 10D by which the sheet 10 is attached to the adjacent sheet 11. A similar form is provided for all except the last sheet which terminates as a straight edge. To the sheet 10 there is adhesively attached an edge strip 10F which is likewise creased at 10F so as to provide some bending motion. It will be noted that the sheet 14 terminates at the portion 15 and is provided with a break at 16 so as to allow some bending motion. That portion of the strip 10E below the crease line 10F is provided with a plurality of apertures 20 and the corresponding portion 15 of the sheet 14 below the crease line 16 is likewise provided with a row of apertures. The apertures (as illustrated for the strip 10E), are thus, in each instance, along a marginal edge of the sheets which correspond to the front and back flyleaves of the book.

The covers 21 and 40 of the book are each composed of at least two plies of plastic sheet 25 and 26 with, preferably, a rectangular sheet of cardboard 27 or other material therebetween so as to provide some stiffness for the cover, where such is desired. The construction of covers 21 and 40 and their method of attachment to the leaves of the book are identical. The cardboard 27 of cover 21 is of such configuration that it extends from adjacent edges 30, 31 and 32 to the edge 33 which is adjacent the point of attachment to the apertured portion of the strip 10E of the front cover. A similar stiffener is provided within the cover 40 which forms the back portion of the book.

The plastic sheet is of that type which is capable of being heated sufficiently to become adhesive when placed in a high frequency electric field. There are many plastics of this type available in sheet form and either of smooth surface or provided with a decorative grained effect. These plastic sheets are composed of materials having a high power factor such that when the materials are placed in a high frequency electrical field the energy of the high frequency electrical field is expended within the material of which the plastic sheet is composed and the sheet is accordingly heated rapidly while in such condition it may be caused to adhere to itself and also to various other materials, as for example paper, woven cloth and other fibrous sheets. In the embodiment illustrated, the two plies forming the cover 21 are the lower ply 25 and the upper ply 26, and these plies are of such dimension so as to extend outwardly at 25A and 27A beyond the stiffener element 27, along one edge as shown in Figure 2. The extending portions, namely strips at 25A and 27A, are arranged so as to overlie the narrow strip along the edge 15 of the back flyleaf 14 below the crease line 16. In respect to the front flyleaf 10 which has the strip 10E attached thereto the plies will overlie the apertured narrow edge of the strip 12A which is below the crease line 10F. It will be noted that the edge of the stiffener 27 comes adjacent to the outer marginal edge of the sheet 14 (or strip 12A) which is apertured, but that a clear space is provided in between them. The terminals of the electronic welding machine illustrated as 50 and 51 in Figure 2 are electrically insulated from each other and high frequency electrical power leads 52 and 53 are attached thereto for conducting high frequency electric power to the terminals. The terminals 50 and 51 are arranged to be moved toward each other for clamping the assembly of plastic and fibrous sheet material therebetween. The terminals are shaped so as to completely overlie a narrow strip extending throughout the apertured area of the strip 10E below the crease line 10F or, as shown in Figure 2, extending throughout the

apertured area of the sheet 14 and the plastic material overlying these areas. The terminals are also of such a width that they overlap the area 54. When high frequency electrical energy is applied to the terminals and they are simultaneously pressed towards each other the heated and softened plastic sheets 25—26 are caused to be pushed towards each other and the sheets are caused to adhere to the faces of the fibrous (paper or cardboard) sheets and also the plastic sheets adhere to each other throughout the areas of the apertures and along the strip 54 between the edge of the stiffener 27 of the cover and the edge of the flyleaf. As a result, the finished article appears as shown in Figure 4 where it will be noted that throughout the area of each of the apertures 20 the plastic sheets are welded to each other and likewise along the strip 54 the plastic sheets are welded to each other. The degree of adhesion of plastic to plastic is very great, and throughout the areas where the plastic sheets are brought into contact with each other when electronically heated, the two sheets fuse to such a degree that they cannot thereafter be separated without destruction. The plastic sheets adhere so firmly to each other that they become united as though they were originally composed of one sheet. Accordingly, the degree of adhesion throughout the apertures 20 and at 54 is very great and very strong. The degree of adhesion of the plastic to fibrous material such as paper, woven cloth or the like (of which strip 10E, and sheets 10 and 14 may be composed) will vary considerably, being relatively great in some instances but less in others. The degree of adhesion to paper and cloth can, for example, be increased by using cements of various kinds which are capable of being softened in the high frequency electric field. Remelt cements composed of the same plastic material of which the sheets 25 and 26 are composed or other plastics of low power factor may therefore be used as cement for enhancing the degree of adhesion between the plastic and the paper or cardboard stock. In addition to the electronic welding occurring along the areas 54 and throughout the areas of the apertures, the two-cover sheets 25 and 27 are electronically welded along the edge area 56 at the end of the hinge joint and along the outer marginal edges 30, 31 and 32 of each cover. This causes the plastic sheets to adhere to each other and thus retain the stiffener 27 firmly locked between

them, since the stiffener is also held at the electronically welded area 54 adjacent the hinge joint.

By this method of fabricating the cover of the book may be attached to paper or fiberboard stock, or to cloth or the like used in the construction of the book. Hinging occurs along the line 54 as well as along the lines 10F and 16.

As many apparently widely different embodiments of this invention may be made without departing from the spirit and scope thereof, it is to be understood that I do not limit myself to the specific embodiments herein.

What I claim is:

A book comprising a plurality of rectangular leaves placed together to form a stack, contiguous edges of the leaves being fastened together along one edge, front and back covers attached to the first and last leaves along said edge said book being characterized in that each cover is composed of overlying rectangular sheets of heat weldable plastic of a size sufficient to cover the leaves, said cover having a narrow strip of material laid between the plastic sheets along an edge thereof corresponding to the fastened edge of the leaves, said strip being extended uniformly beyond said sheets at said edge and fastened to the adjacent leaf along said edge, the portion of the strip between said sheets being apertured and said sheets of plastic being heat welded together through said apertures, and further characterized in that said cover is folded along a line parallel and close to that edge of the narrow strip which is positioned between the plies, said narrow strip being attached to the adjacent leaf so as to be substantially flat against said leaf with said fold-line at the fastened edge.

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