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BOOK COVER AND MACHINE AND METHOD FOR MAKING SAME

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FIG. 1

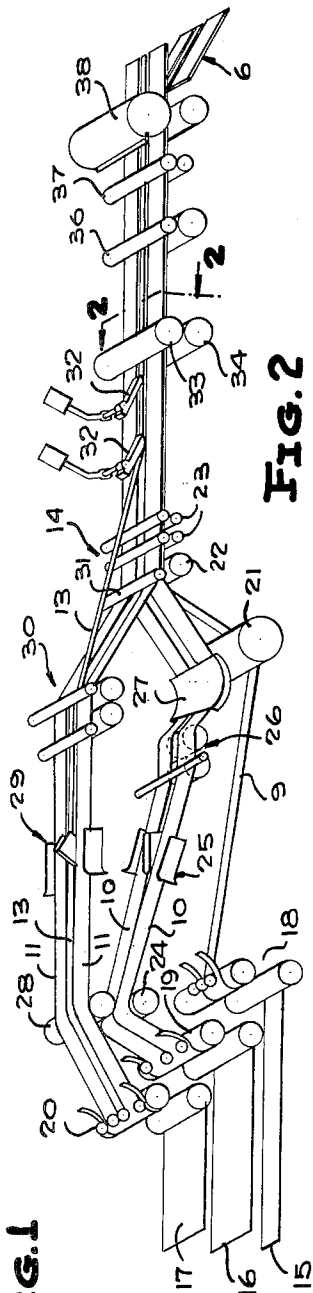


FIG. 2

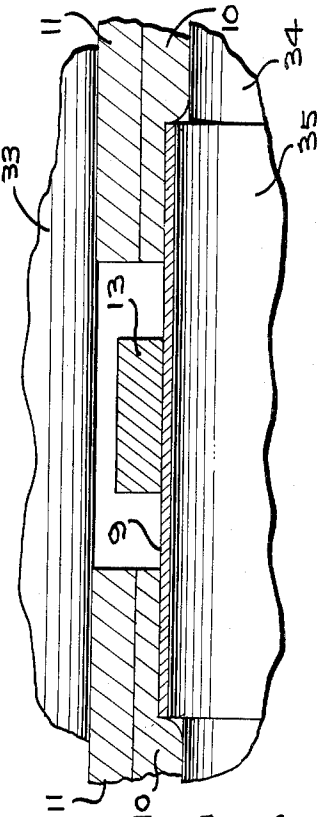


FIG. 3

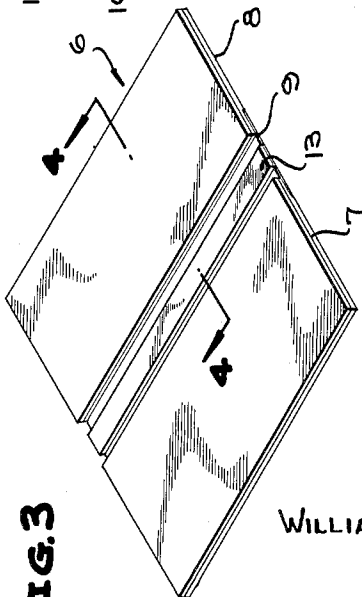


FIG. 4

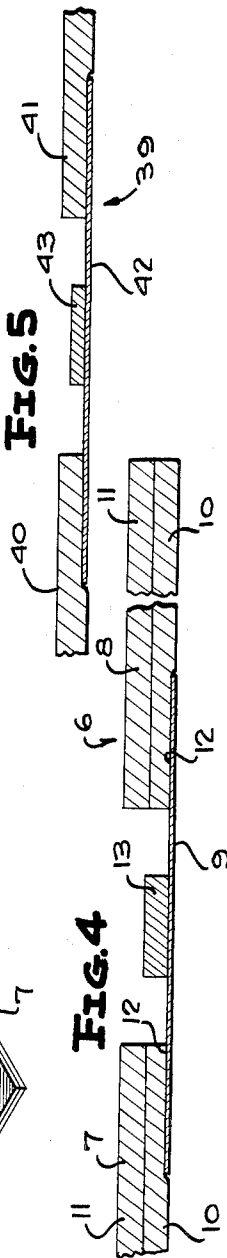
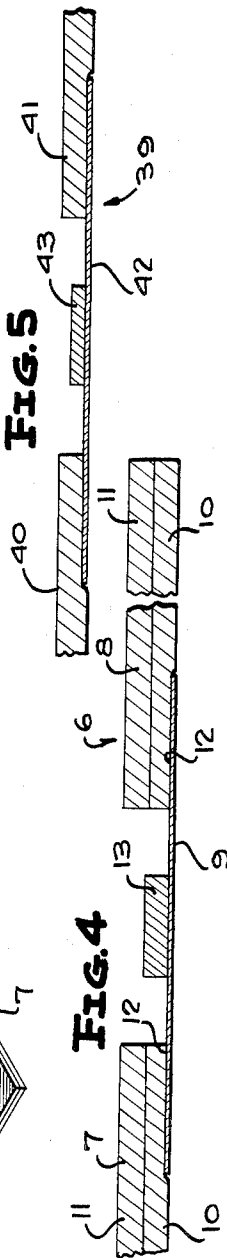


FIG. 5



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BOOK COVER AND MACHINE AND METHOD FOR MAKING SAME

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3 Claims. (Cl. 281-29)

This invention relates in general to new and useful improvements in the manufacture of paper products, and more particularly to a novel book cover.

At the present time, there are being manufactured book covers which are formed primarily of two leafboards hingedly connected together by a tape. In certain instances, the book covers may include a spine carried by the tape and disposed intermediate the leafboards. When the tape does not extend the full width of the book cover, the central portion of each book cover is of an increased thickness equal to the thickness of the tape.

When book covers of the previous type described above are palletized or stacked, due to the added thickness of the tape at the centers thereof, the book covers have a decided hump in the center. This, of course, is unsuitable for stacking for shipment, and when the stacks are tightly bound, results in undue distortion of the book covers. In order to overcome this humping in the center of the stacked book covers, the practice of inserting strips of board every so often has been resorted to, but this has only resulted in deformation of the leafboards.

It is therefore the primary object of this invention to provide a book cover which includes the customary leafboards and tape hingedly connecting together the leafboards, but wherein the tape is disposed substantially within the general plane of the leafboards so that the center of the book cover is of a no greater thickness than the outer portions of the book cover, with the result that the book cover may be stacked and a stack of such book covers will be of substantially the same height throughout the length of the book cover.

Another object of this invention is to provide a novel book cover which includes at least a pair of leafboards and a relatively thin flexible tape hingedly connecting together the leafboards, the tape being countersunk within edge portions of the leafboards whereby the maximum thickness of the book cover is substantially equal to the thickness of the leafboards and there is no increase in thickness centrally of the book cover which would make stacking of the book covers difficult.

Another object of this invention is to provide a novel book cover which includes two leafboards having opposed edges thereof in spaced relation, and the edge portions of the leafboards having indentations or recesses in the rear surfaces thereof, a tape formed of relatively thin and flexible paper material interconnecting together the leafboards, the edge portions of the tape being seated wholly within the depressions in the leafboards, and there being a spine carried by the tape, the spine being relatively narrow and being centered between the two leafboards.

It has been proposed to form the book cover, which is the subject of this invention, by providing the depressions for the tape in the leafboards prior to the assembling of the leafboards and tape. However, when the book covers are formed on a high speed basis from webs, it is extremely difficult to obtain the necessary alignment of the webs. Therefore, this practice is undesirable.

In view of the foregoing, it is another object of this invention to provide a novel method of forming a book cover of the type which includes a pair of leafboards connected together by a tape for hinged movement, the method including the usual practice of adhesively securing the tape to the leafboard edges, and having the added

step of pressing on the tape so as to depress the portions of the leafboards overlying the tape whereby the tape is recessed within the general planes of the leafboards.

Still another object of this invention is to provide a novel method of forming book covers on a continuous basis, the method including the steps of adhesively securing a tape to two continuous leafboard webs, and then passing the assembled webs between rolls which act to exert a pressure against the tape so as to compress those portions of the leafboard webs which overlie the tape and thus result in the countersinking of the tape within the leafboard webs, after which the assembled webs are cut at spaced intervals into the required book covers.

A further object of this invention is to provide a novel method of forming book covers of the type including two leafboards connected together by a tape for hinged movement, the method including the steps of exerting a pressure on the leafboards of the assembled leafboards and tape, with the pressure being directed to those portions of the leafboards engaged by the tape, the pressure being of such a nature so as to permit the depressing or collapsing of the leafboards a distance equal to substantially twice the thickness of the tape wherein the edge portions of the tape are greatly recessed within the leafboards, and after pressure is released on the leafboards, the material of the leafboards will expand so that the tape has an outer surface disposed substantially coplanar with an outer surface of the leafboards, and the tape is disposed wholly within the general plane of the leafboards.

Still another object of this invention is to provide a novel improvement in existing types of book cover forming apparatus wherein a plurality of continuous webs provided in spool form are first shaped and then adhesively secured together, after which the secured-together webs are cut into book cover lengths, the apparatus being improved by the addition of rolls for engagement with the assembled webs to compress the portions of the leafboard webs a sufficient extent to permit the seating of the edges of the tape within the general plane of the leafboard webs, after which the assembled webs are cut into book cover lengths.

With the above and other objects in view that will hereinafter appear, the nature of the invention will be more clearly understood by reference to the following detailed description, the appended claims and the several views illustrated in the accompanying drawing.

In the drawing:

FIGURE 1 is a schematic view showing the details of the apparatus for forming a book cover in accordance with this invention.

FIGURE 2 is an enlarged fragmentary vertical sectional view taken along the line 2-2 of FIGURE 1, and shows the specific relationship of pressing rollers with respect to the assembled webs, the view being dimensionally exaggerated.

FIGURE 3 is a perspective view on an enlarged scale of a book cover formed in accordance with this invention.

FIGURE 4 is an enlarged fragmentary vertical sectional view taken along the line 4-4 of FIGURE 3, with an intermediate portion of the book cover being broken away and shows the specific details of construction of the book cover.

FIGURE 5 is an enlarged fragmentary vertical sectional view taken through the central portion of a modified form of book cover.

Referring now to the drawings in detail, reference is first made to FIGURES 3 and 4, wherein a book cover in accordance with this invention is illustrated, the book cover being generally referred to by the numeral 6. The book cover 6 is formed of a pair of leafboards 7, 8 which are connected together by a tape 9. It is to

be noted that the leafboards 7 and 8 are formed of two plies 10, 11, and the tape 9 is secured to the plies 10. The plies 10 are provided with recessed edge portions, which are recessed as at 12, and into which edge portions of the tape 9 are received. In this manner, the outer surface of the tape 9 is disposed substantially coplanar with the outer surfaces of the leafboards 8.

The book cover 6 also includes a spine 13. In the preferred construction of the book cover 6, the spine 13 is of the same thickness as the layer 11 and is formed from the same web as the layer 11. The layer 10 of the two leafboards 7, 8 is formed from the same web.

Reference is now made to FIGURE 1 in detail, wherein there is illustrated an apparatus for forming the book cover 6, the apparatus being schematically illustrated and generally referred to by the numeral 14. The apparatus 14 is constructed to handle three webs, the webs including a relatively thin web 15 and two thicker webs 16 and 17, with the web 17 being wider than the web 16, and the web 15 being relatively narrow as compared to the webs 16 and 17.

The apparatus or machine 14 includes a lower slitting mechanism 18 with which the web 15 engages. The slitter 18 trims the web 15 to define the tape 9.

The machine 14 also includes a slitter 19 which is engaged with the web 16. As the web 16 passes over the slitter 19, not only is the web 16 trimmed to an arcuate size, but it is also divided into half to form the two layers 10 described above with respect to the book cover 6.

A third slitter 20 is provided for engagement with the web 17. As the web 17 passes over the slitter 20, not only is the web 17 trimmed for size and alignment requirements, but it is also divided into three components, the outer two being the layers 11, and the central being in the form of a narrow strip which forms the spine 13.

After passing through the slitter 18, the web 15, which has now become the tape 9, passes beneath a suitable guide roller 21 and up over another guide roller 22, and then between two pairs of pressing rollers 23.

The two layers 10 pass over a guide roller 24 after passing through the slitter 19 and then pass through a suitable guide mechanism, generally referred to by the numeral 25, which effects the necessary separation of the layers 10. The layers 10 then pass through a suitable adhesive applying mechanism, generally referred to by the numeral 26, wherein adhesive is applied to the undersides of the layers 10 adjacent the inner edges thereof. The layers 10 then pass beneath a suitable guide 27 and up over the roller 22 where the adhesively coated portions of the layers 10 come into contact with the upper surface of the tape 9.

After the web 17 passes through the slitter 20, as stated above, it is divided into the two layers 11 and the spine 13. The layers 11 and the spine 13 pass over a guide roller 28 and then through a guide mechanism, generally referred to by the numeral 29, which guide mechanism spaces the layers 11 on opposite sides of the spine 13. The layers 11 and the spine 13 then pass through a suitable adhesive applicator, generally referred to by the numeral 30, wherein adhesive is applied to the undersides of the layers 11 and the spine 13.

After adhesive has been applied to the layers 11, the layers 11 move downwardly beneath a guide roller 31 and come into contact with the layers 10, the layers 10 and 11 being aligned. The layers 10 and 11, together with the tape 9, pass through the rollers 23, wherein the adhesively coated opposed surfaces of the tape 9 and the layers 10, 11 are tightly pressed together to effect the adhesive bonding together of these components. The spine 13 passes above the rolls 23 and passes beneath special pressers 32 which press the adhesive coated spine 13 against the tape 9 and effect the necessary adhesion thereof to the tape 9.

The completely assembled portions of the webs 15, 16 and 17, that is, the tape 9, the layers 10 and 11, and the spine 13, then pass between a pair of rolls 33, 34.

The roll 33, which is disposed uppermost, is smooth and of the same diameter throughout its length. The roll 34 is also smooth, but in lieu of being of the same diameter throughout its length, is provided with a centrally located rib 35 which has a width substantially equal to the width of the tape 9 and projects outwardly of the remainder of the roll 34 a distance equal to substantially twice the thickness of the tape 9. As the adhesively secured assembled elements of the book cover pass between the rolls 33, 34, the rib 35 on the roll 34 tightly compresses against the tape 9 and moves the tape 9 upwardly and forms a depression in the undersides of the layers 10. Thus, as the assembled unit passes out from between the rolls 33, 34, the tape 9 will be recessed within the layers 10. However, due to the inherent resiliency or spring-back qualities of the paperboard from which the layers 10 and 11 are formed, the layers 10 will spring back substantially one-half of the amount of the depressing thereof, with the result that in the completed book cover, the tape 9 will be substantially coplanar with the layers 10, and be neither recessed nor projecting in any substantial amount.

The assembled units of the book cover pass through suitable feed rollers 36, 37 to a shear 38 which cuts the assembled units into individual ones of the book covers 6. Due to the fact that the book cover 6 has the tape 9 thereof recessed within the leafboards 7, 8, it will be readily apparent that the book covers 6 may be stacked without any bulging thereof at the centers in a manner to preclude the proper stacking and securement of the book covers for shipment.

In the book cover illustrated in FIGURES 3 and 4, typical dimensions will be for each of the layers 10, 11, to be of a thickness of 0.040 inch and the tape 9 to have a thickness of 0.010 inch. The spine 13, of course, will be of the same thickness as the layers 11. These, of course, are only typical dimensions.

Reference is now made to FIGURE 5 wherein there is illustrated a portion of a modified form of book cover formed in accordance with this invention and generally referred to by the numeral 39. The book cover 39, like the book cover 6, includes a pair of leafboards 40, 41, which are connected together by a tape 42. The tape 42 carries a spine 43 which is disposed intermediate the leafboards 40, 41. In the book cover 39, the leafboards 40, 41 are formed of single thickness material in lieu of being laminated. The spine 43 remains of a thickness substantially equal to one-half the thickness of the leafboards, but must be furnished from its own supply of paperboard.

It is to be understood that while in the machine 14 adhesive has been illustrated as being placed on the layers 10, 11 and the spine 13, the adhesive may be applied to any of the various components of the book cover in a pattern which will produce the necessary adhesive securing together of the components. For example, adhesive could be placed on the tape 9 in lieu of being placed on the layers 10. Also, the adhesive could be placed on the upper surface of the layers 10 in lieu of being placed on the undersides of the layers 11.

From the foregoing, it will be seen that novel and advantageous provision has been made for carrying out the desired end. However, attention is directed to the fact that variations may be made in the example book covers, method and apparatus disclosed herein without departing from the spirit and scope of the invention, as defined in the appended claims.

I claim:

1. A method of forming a book cover of the type including at least two leafboards each having first and second parallel edge portions, a spine and a tape comprising the steps of assembling the two leafboards with the first edge portions thereof in opposed spaced relationship, the

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spin between and spaced from the first edge portions, and the tape overlying the spine and the leafboards with edges of the tape overlapping, secured to and terminating at the first edge portions of the leafboards remote from the second edge portions thereof; passing the assembled leafboards, spine and tape between opposed pressure rolls to apply a predetermined pressure on the tape and the first leafboard edge portions without placing pressure on the spine to first depress the tape beyond the thickness thereof into the leafboards only at the first leafboard edge portions whereby the tape is recessed below the surfaces of the leafboards, and thereafter releasing the predetermined pressure to return the tape to a generally flush position with the leafboard surfaces by passing the assembly beyond the opposed pressure rolls.

2. A method of forming a book cover of the type including at least two leafboards each having first and second parallel edge portions, a spine and a tape comprising the steps of advancing first and second continuous webs of material and a tape along a predetermined path, dividing the webs into at least a spine web and two pair of leafboard webs, assembling the two pair of leafboard webs with first edge portions thereof in opposed spaced relationship, the spine web between and spaced from the first edge portions, and the tape overlying the spine web and the leafboard webs with edges of the tape overlapping, secured to and terminating at the first edge portions of the leafboard webs remote from second edge portions thereof; passing the assembled webs and tape between opposed pressure rolls to apply a predetermined pressure on the tape and the first leafboard web edge portions without placing pressure on the spine web to first depress the tape beyond the thickness thereof into the leafboard webs only at the first leafboard edge portions whereby the tape is recessed below the surfaces of the assembled leafboard webs, releasing the predetermined pressure to return the tape to a generally flush position with the leafboard web surfaces by passing the assembly beyond the opposed pres-

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sure rolls and thereafter severing the leafboard webs, spine and tape to form the book cover.

3. A method of forming a book cover of the type including at least two leafboards each having first and second parallel edge portions, a spine and a tape comprising the steps of advancing first and second continuous webs of material and a tape along a predetermined path, dividing the first web into two leafboard webs and a spine web and the second web into two other leafboard webs to form at least two pair of leafboard webs of two leafboard webs each, assembling the two pair of leafboard webs with first edge portions thereof in opposed spaced relationship, the spine web between and spaced from the first edge portions, and the tape overlying the spine web and the leafboard webs with edges of the tape overlapping, secured to and terminating at the first edge portions of the leafboard webs remote from second edge portions thereof; passing the assembled webs and tape between opposed pressure rolls to apply a predetermined pressure on the tape and the first leafboard web edge portions without placing pressure on the spine web to first depress the tape beyond the thickness thereof into the leafboard webs only at the first leafboard edge portions whereby the tape is recessed below the surfaces of the assembled leafboard webs, releasing the predetermined pressure to return the tape to a generally flush position with the leafboard web surfaces by passing the assembly beyond the opposed pressure rolls and thereafter severing the leafboard webs, spine and tape to form the book cover.

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