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F. S. SCHADE

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LOOSE LEAF BOOK AND METHOD OF MANUFACTURE

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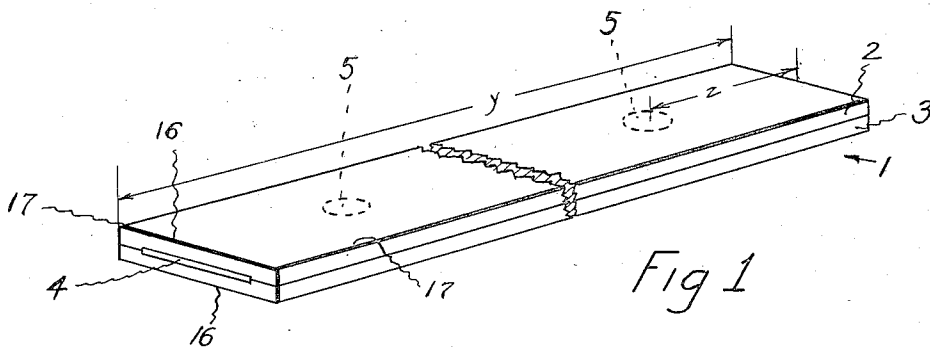


Fig 1

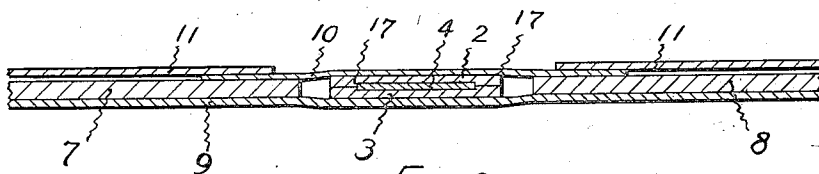


Fig 2

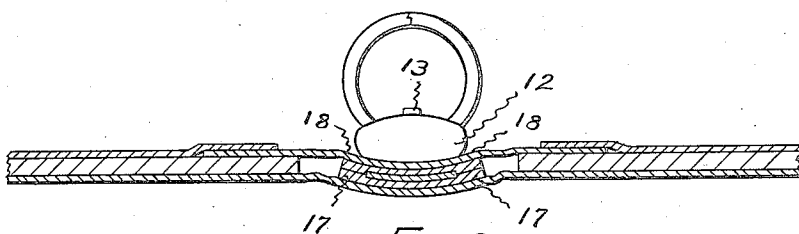


Fig 3

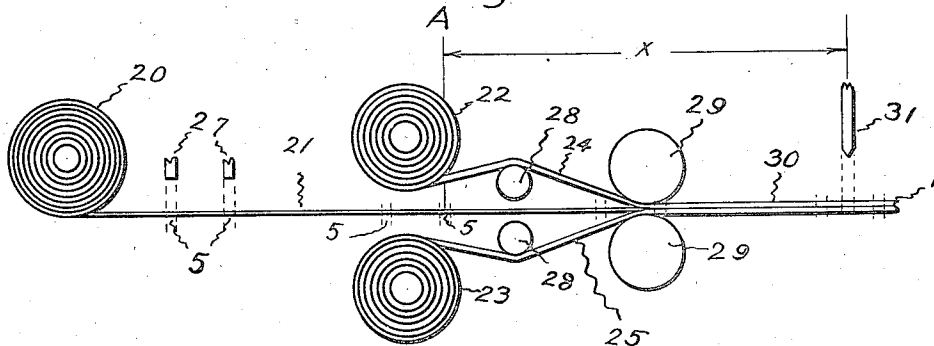


Fig 4

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LOOSE LEAF BOOK AND METHOD OF
MANUFACTURE

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5 Claims. (Cl. 129—24)

This invention relates to an improvement in loose leaf books, more particularly of the ring binder type, and to an improved method of manufacturing such books.

5 The cases for the lower priced ring binders are customarily made by automatic machines which assemble and finish the casing elements including back and side members, cover, hinge and lining sheets into flat form, the back portion being thereafter given a curved form in suitable dies. 10 In one form of construction the back portion of the casing comprises a piece of cardboard or the like provided with a metal stiffening member. Such a construction is shown in my Patent No. 15 1,983,883, dated December 11, 1934. My present invention deals particularly with a back member of this type, and one of its objects is to effect economies in the manufacture of metal reenforced back members. A further object is to provide a back member of this class which will facilitate the automatic machine assembly of the casing and secure an improved binder. The advantages derived by my invention will be apparent from the following discussion of the details 20 of the method and structure.

In the accompanying drawing—

Fig. 1 is a perspective view of a back member according to my invention, the thickness of the parts in the several figures being exaggerated for the purpose of clearness; 30

Fig. 2 is a fragmentary transverse sectional view showing the back in flat assembled relation with other casing elements;

Fig. 3 is a view similar to Fig. 2 but showing the back member brought to its curved form; and 35

Fig. 4 shows diagrammatically the method of forming the back member of the casing.

As best shown in Fig. 1, the back member generally indicated at 1 comprises two layers or strips of cardboard 2 and 3, between which is positioned a strip of thin metal 4, all the strips being cemented together by any suitable adhesive material. The metal strip 4 is sufficiently thin 45 so that it does not add materially to the thickness of the two cardboard strips. The strip 4 is of no greater width than the strips 2 and 3, and preferably, as shown in the drawing, the strip 4 is of less width than the strips 2 and 3, so that along the long edges of the back member the cardboard strips are secured directly together. The length of all the strips is the same, the ends of the metal strip being flush with the ends of the cardboard strips. Although the metal is of sufficient thinness so that its presence is not discernible through the thicker cardboard strips, its stiffness and rigidity are such that when it is pressed into a transversely curved formation as shown in Fig. 3 it retains the back 50 member as a whole permanently in curved form.

Prior to its inclusion between the cardboard strips 2 and 3 the metal strip 4 is provided with spaced apertures 5, as indicated in dotted lines in Fig. 1. The function of the openings 5 is to receive the rivets 13 which secure the ring mechanism, indicated at 12 in Fig. 3, to the back member 1. The openings 5 are preferably made over-size to permit the rivet holes through the cardboard element of the back member to be made through a stack of casings by means of a paper 10 drill. The function of the holes 5 and their over-sizing is fully described in my prior patent above identified, and need not be discussed in detail here.

In Fig. 2 the back member 1 is shown assembled in flat relation with side panels 7 and 8, 15 cover sheet 9, hinge strip 10, and lining sheets 11, all pasted or otherwise cemented together in the usual manner. This assembly is accomplished by the standard automatic case making machine 20 above mentioned.

The binder is completed by pressing the back member to curved shape as shown in Fig. 3, and by the addition of the desired ring mechanism 12, secured to the back member by rivets 13 passing 25 through openings 5. But the back member may sometimes be left in flat form rather than put through the curving step, accordingly as desired.

By constructing the back member as above described, the stiffening and reinforcing action of 30 the metal insert is made effective to the extreme ends of the member, while at the same time, when the paper, fabric, or thin leather cover sheet 9 is bent or folded over the short ends of the back member, in finishing the binder, the folding takes place about the relatively soft corners 16 of the cardboard strips and not around a hard metal edge. This same feature of construction by which the reinforcement is extended to 40 the extreme end of the backing member without substantial contact of the cover material with the metal has a further advantage in the subsequent handling of the binder in use, in that breaking down of the end of the back when the binder is drawn from a shelf or file by hooking 45 the fingers over the upper end is resisted by the metal insert, and yet the cardboard corners 16 act as a cushion between the metal and the cover sheet when the binder is thus or otherwise 50 handled.

A further advantage of the invention is found in the improved hinge action which takes place along the edges 17. At these edges the cardboard plies 2 and 3 extend slightly beyond the metal 4 and form a zone of relative flexibility at each 55 longitudinal edge so that when the hinge action of the cover sheet and hinge strips takes place at 18, the edges of the back can yield or bend slightly with the movement of the hinge members.

As shown diagrammatically in Fig. 4, the ele- 60

ments of my improved back member may be assembled in an economical manner from rolls of strip material. Referring to Fig. 4, 20 indicates a supply roll of metal ribbon 21 from which the strips 4 are formed. At 22 and 23 are shown rolls which respectively supply the cardboard webs 24 and 25 from which strips 2 and 3 are formed. As indicated, the ribbon of metal is fed between the webs 24 and 25. Prior to its entry between the cardboard webs, the holes 5 are punched in the metal ribbon by a suitable rotary or reciprocating punch or punches 27. Suitable glue or other cement is applied to the adjacent faces of the webs 24 and 25 as at 28 and the metal ribbon and cardboard webs are then pressed together as by rolls 29. The composite web 30 is then severed, to form the completed back members 1, by a rotary or reciprocating knife 31. The holes 5 must be positioned with reasonable accuracy with respect to the ends of the strip 1. Although the openings 5 are covered by the cardboard, the fact that the metal ribbon is not subjected, during the laminating operation, to tension sufficient to stretch it in an appreciable degree, renders it possible to control the cutting operation to secure the desired accuracy in the position of the openings in the finished product. For example, the knife operation may be tripped or controlled by the arrival of alternate openings 5 at a point A, positioned a predetermined distance X rearwardly of the cutter, which distance may be any reasonable multiple of the desired length Y of the strip 1 plus or minus the desired distance Z of holes from the end of the strip, see Figs. 1 and 4.

As a result of my invention, metal backed binders possessing the advantages above pointed out, may be manufactured with only slight additional cost chargeable to the incorporation of the metal member, and the parts that go to make up the casing are handled by the standard automatic case making machine, with the same facility as when the back member is a solid cardboard strip, since the working faces of the metal carrying back member, made in accordance with my invention, are furnished by the cardboard strips 2 and 3.

By using the term cardboard I mean to include any material, whether of paper or other fiber, made up into book making boards that can be handled in book making machines as cardboard is handled for economical manufacture.

I claim:

1. A loose leaf book of the type having a casing including a back member and cardboard side members hinged thereto by the usual cover and hinge sheets, in which said back member comprises, superposed strips of cardboard having a thin metal strip interposed therebetween, both faces of said metal strip, at least, being completely covered by the cardboard strips, all of said strips being cemented together to form a unitary member substantially equal in thickness to the thickness of the side members, the edges of the cardboard strips acting as cushions between the edges of the metal strip and the cover and hinge sheets of the casing.

2. A loose leaf book of the type having a casing including a back member and cardboard side members hinged thereto by the usual cover and

hinge sheets, in which said back member comprises, superposed strips of cardboard having a thin metal strip interposed between them, said metal strip being of the same length as, and no wider than, the cardboard strips, and positioned with its end edges flush with the end edges of the cardboard strips, all of said strips being cemented together to form a unitary member substantially equal in thickness to the thickness of the side members, the edges of the cardboard strips acting as cushions between the edges of the metal strip and the cover and hinge sheets of the casing.

3. A loose leaf book of the type having a casing including a back member and cardboard side members hinged thereto by the usual cover and hinge sheets, in which said back member comprises, superposed coextensive strips of cardboard having a thin metal strip interposed therebetween, said metal strip being of the same length as, but of less width than, the cardboard strips and positioned symmetrically with respect to the center line of the cardboard strips, all of said strips being cemented together to form a unitary member substantially equal in thickness to the thickness of the side members having relatively flexible cardboard portions along its longitudinal edges where the back member is hinged to the side members of the casing, the end edges of the metal strip being positioned flush with the end edges of the cardboard strips, the latter edges forming cushions between the end edges of the metal strip and the cover sheet of the casing.

4. The method of forming the back member of a casing for loose leaf books which comprises feeding into laminated relation two strips of cardboard and a strip of thin metal with the metal strip positioned between the cardboard strips, the latter strips having a width at least equal to the width of the metal strip, punching pairs of spaced holes in the metal strip at predetermined intervals and applying adhesive to the adjacent faces of the cardboard strips, prior to the inclusion of the metal strip between the cardboard strips, to join the several strips into a unitary laminated strip and thereafter cutting lengths from the laminated strip, the cutting operation being correlated with the punching operation to locate a pair of the punched openings in predetermined position in each severed length.

5. A loose leaf book of the type having a casing including a back member and cardboard side members hinged thereto by the usual cover and hinge sheets, in which said back member comprises, superposed substantially coextensive strips of cardboard having a thin metal strip, provided with oversized rivet holes, interposed therebetween, both faces of said metal strip, at least, being completely covered by the cardboard strips and said metal strip being positioned symmetrically with respect to the center line of the cardboard strips, all of said strips being cemented together to form a unitary member substantially equal in thickness to the thickness of the side members, the cardboard strips providing cushions between the edges of the metal strip, including the edges of said oversized rivet holes, and the hinge and cover sheets of the casing.

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