

Aug. 25, 1936.

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2,051,908

CASING FOR LOOSE LEAF BINDERS AND METHOD OF FORMING THE SAME

Filed Jan. 10, 1936

2 Sheets-Sheet 1

Fig. 1.

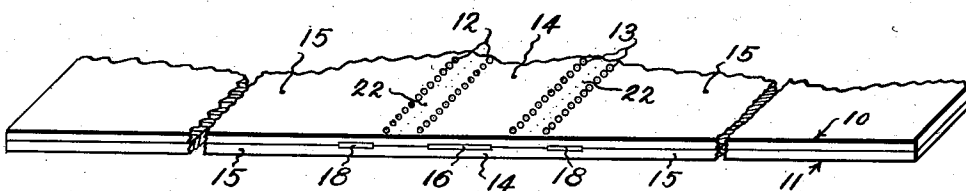
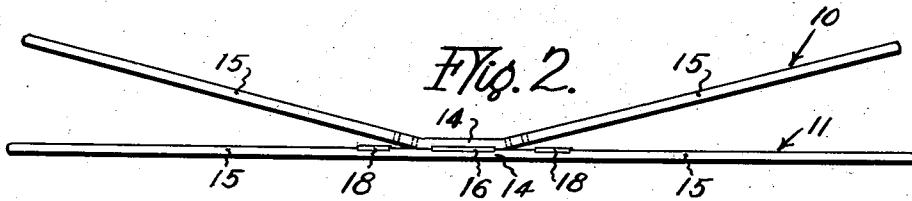
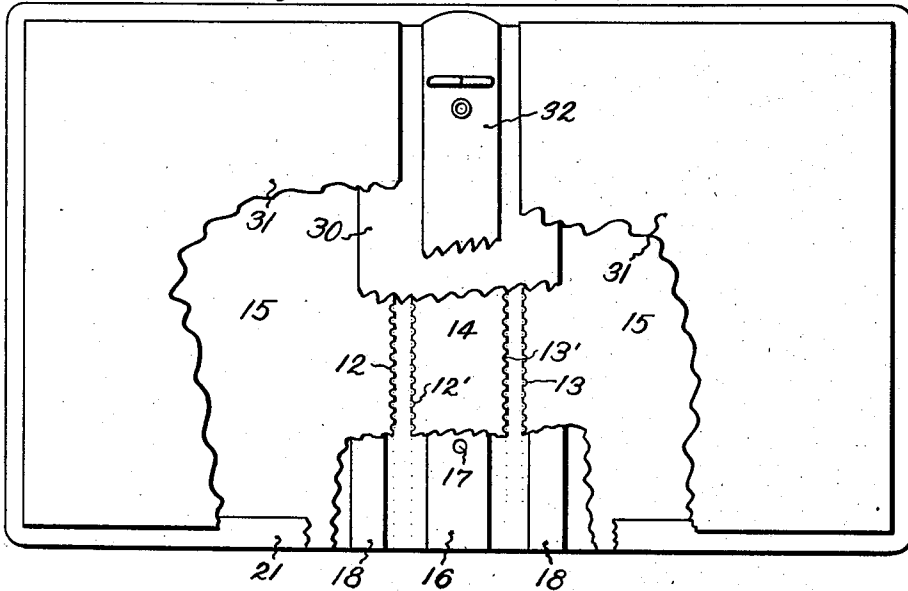


Fig. 3.

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2 Sheets-Sheet 2

Fig. 4.

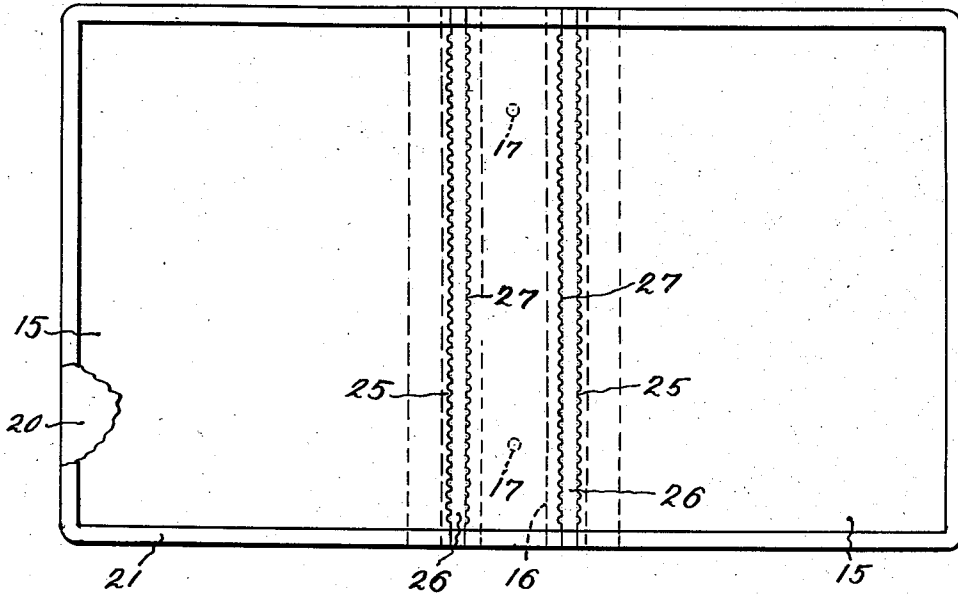
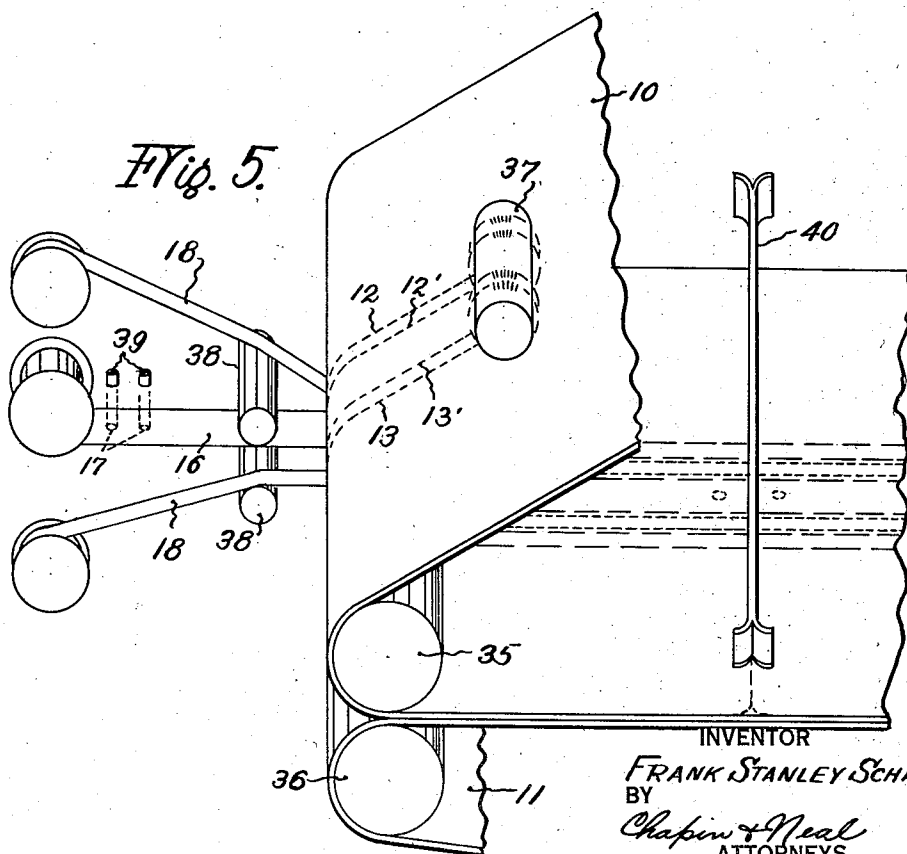


Fig. 5.



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CASING FOR LOOSE LEAF BINDERS AND METHOD OF FORMING THE SAME

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Application January 10, 1936, Serial No. 58,551

7 Claims. (Cl. 281—29)

This invention relates to the construction of casings for books, loose leaf binders, and the like, and has more particular reference to a method of forming and assembling the back and side panels which comprise the skeleton of the casing. The general object of the invention is to so assemble the skeleton portions of the casing as to include metal members in the back and side panel portions without materially adding to the cost and in a manner to permit the subsequent automatic machine application of the usual cover, hinge, and lining sheets.

In the better binder constructions a strip of metal is inserted in the side panel members at points such that when the binder is closed the metal reinforcements come opposite the sides of the binder rings and prevent the rings from marring the sides by denting the latter and forming unsightly bulges on the outside surface of the binder. Because of the added cost of construction it has heretofore been impossible to supply this desirable reinforcement in the cheaper machine-made binders and it is the principal object of the present invention to provide a method of providing this form of reinforcement in a manner consistent with machine operations. I accomplish this by means of a novel arrangement of the binder elements and a novel method of accomplishing their assembly.

Further objects and advantages which reside in the details of such arrangement and assembly will be apparent in the following specification and claims.

In the accompanying drawings—

Fig. 1 is a plan view of a casing in flat form, made according to the invention, parts being broken away to show the inner construction;

Fig. 2 is an end view of the casing skeleton;

Fig. 3 is a fragmentary perspective view on a larger scale showing the skeleton assembled;

Fig. 4 is a plan view, with parts broken away, showing the completed skeleton; and

Fig. 5 is a diagrammatic view showing the preferred manner of carrying out the method.

In the drawings the thickness of the parts has been exaggerated in the interest of clearness.

The binders to which the present invention has reference are of the flexible type, the flexibility being secured by forming the binder panels of two plies of thin cardboard. In order that the side panels of the completed binder shall flex freely the plies forming the side panels must be free to slide or slip slightly over each other. The structure and method of my present in-

vention secure this freedom to a maximum degree.

According to my invention the construction of the binder casing starts with two sheets or plies of thin cardboard, generally indicated at 10 and 11, which both have the overall flat dimensions of the binder to be built. The ply 10 which, when the binder is finished will lie on the inside of the binder and is, therefore, referred to as the inner ply, is perforated or otherwise partially severed or weakened along two pairs of parallel lines, as indicated at 12—12' and 13—13'. The lines of perforation 12' and 13' define the back panel portion 14 and the lines 12 and 13 define the inner edges of the side panel portions 15 of the plies individually and of the binder casing as a whole. Between the back panel portion 14 I place a strip of thin metal 16 of slightly less width than the back panel and extending from the top to the bottom edges of the casing. The strip 16 prior to its insertion is preferably provided with oversized rivet openings 17 for the subsequent attachment of the loose leaf mechanism later referred to. The strip 16 is cemented to the outer ply 11. Strips of thin metal 18 are similarly cemented to the side panel portions 15 of ply 11 adjacent to but slightly spaced from the inner edges of said portions as defined by the lines 12 and 13 so as to lie between the side panel plies in a position to reinforce the side panels against the thrust of the binder rings as previously mentioned. The back panel portion 14 of the inner ply 10 is cemented to the strip 16 so that the strip 16 is incorporated in the back panel portion of the casing skeleton, as shown in Fig. 2. As is also clear from the latter figure, the side panel portions 15 of the plies 10 and 11 are left free from each other.

It will be seen that at this stage the various parts are held together in desired relative position and the structure can be handled as a unit. In this condition the skeleton is placed in a conventional case forming machine which, as an entirely automatic machine operation, applies and pastes a flexible cover sheet 20 to the exposed face of outer ply 11 and folds the edge portions 21 of said sheet around the edges of the plies and pastes them to the exposed face of inner ply. The portions 22 of the inner ply 10 lying between the parallel perforations 12—12' and 13—13' are now removed, the ends being drawn from beneath the folded over edges of the cover, leaving the casing in the form shown in Fig. 4. It will be seen that by the removal of portions 22 the side panel portions 15 of ply 10 are completely free of

the underlying ply 11 along their inner edges 25 and that they are connected to the underlying ply only at their outer edges only by the flexible cover sheet 20. The side panels 15 of the plies may, therefore, slide or slip slightly over each other, securing the desired flexibility of the side panels of the casing in an improved and very efficient manner, and with all the advantages afforded by the use of the conventional case building machines.

The portions 26 of the outer ply 11 left exposed by the removal of strips 22 form hinge zones permitting the side panels to be swung together in "book" form, the bending being graduated outwardly from the edges 27 of the back panel portion 14 of the inner ply which acts as a bending edge or major hinge line.

If a sharper hinging line is desired the outer ply 11 may be scored or perforated adjacent the edges of the back panel.

After the covering of the casing, the back panel 14 may be pressed or otherwise bent to curved book back form, or left flat, and the casing completed as shown in Fig. 1 by the addition of hinge strip 30, lining sheets 31, and the ring binder mechanism 32.

I preferably carry out my construction method with the plies and reinforcing strips in web form, as shown diagrammatically in Fig. 5. As shown in the latter figure, the plies 10 and 11 are brought together between presser rolls 35 and 36, the perforation lines 12, 12', 13, and 13' being formed in the ply 10 by a suitable perforating device 37 before the webs are brought together. The metal strips forming the reinforcements 16 and 18 are fed, from suitable supply rolls in properly spaced relation between the plies as the latter enter between the presser rolls. Adhesive is applied by rolls 38, from reservoirs not shown, to both sides of strip 16 and the under faces of strips 18, so that both plies 10 and 11 are secured to strip 16, but strips 18 are secured only to ply 11. Suitable punches, indicated at 39, form the rivet holes 17 in strip 16 prior to its incorporation between the plies. After the assembly is completed the composite web passes beneath a suitably shaped cutter 40 which severs the web into units having the structure of Fig. 2. These units are then covered in the case making machines as previously described, and the strips 22 removed.

While the method is of particular advantage in making metal reinforced casings, the advantages of greater flexibility in the side panels, due to the freedom of the inner side panel plies after the removal of strips 22, and the improved hinge action in the zones 26 are obtained even though strips 18, or both 16 and 18, are omitted.

What I claim is:

1. The method of forming casings for loose leaf binders and the like composed of two plies of cardboard having the overall flat dimensions of the casing to be built which comprises, securing said plies together over those portions only of the plies which are to become the back panel of the casing, applying a cover sheet to the exposed face of the outer ply, said sheet being of greater overall dimensions than the plies, folding the edge portions of the cover sheet around the edges of the plies and cementing said edge portions to the exposed face of the inner ply, removing a narrow strip of the inner ply adjacent each side of the back panel portion of the inner ply, and applying the usual hinge and lining sheets to complete the casing.

2. The method of forming casings for loose leaf binders and the like composed of two plies of cardboard having the overall flat dimensions of the casing to be built which comprises, partially severing the inner ply along two pairs of spaced parallel lines positioned on opposite sides of that portion of the ply which is to become part of the back panel of the casing, the adjacent lines of the pairs defining the long edges of the back panel, securing the plies together over the back panel portion only of the plies, applying a cover sheet to the exposed face of the outer ply, said sheet being of greater overall dimensions than the plies, folding the edge portions of the cover sheet around the edges of the plies and cementing said edge portions to the exposed face of the inner ply, removing the portions of the inner ply between said lines of partial severance at each side of the back panel portions and applying the usual hinge and lining sheets to complete the casing.

3. The method of forming casings for loose leaf binders and the like composed of two plies of cardboard having the overall flat dimensions of the casing to be built which comprises, perforating the inner ply in a manner to permit subsequent removal of a portion of said ply along narrow hinging zones defining the long edges of the back panel portion, positioning strips of thin metal between the plies in those portions of the plies which are to become the back and side panels of the casing, cementing both plies to the metal strips in the back panel portion, cementing the metal strips in the side panel portions to one of the two plies only, applying a cover to the so assembled and perforated plies, removing the portions of the inner ply at said hinging zones and applying the usual hinge and lining sheets to complete the casing.

4. The method of forming casings for loose leaf binders and the like composed of two plies of cardboard having the overall flat dimensions of the casing to be built which comprises, partially severing the inner ply along two pairs of spaced parallel lines positioned on opposite sides of that portion of the ply which is to become part of the back panel of the casing, the adjacent lines of the pairs defining the long edges of the back panel, positioning strips of thin metal between the plies in those portions of the plies which are to become the back and side panels of the casing, cementing both plies to the metal strip in the back panel portion, cementing the metal strips in the side panel portions to one of the two plies only, applying a cover sheet to the exposed face of the outer ply, said sheet being of greater overall dimensions than the plies, folding the edge portions of the cover sheet around the edges of the plies and cementing said edge portions to the exposed face of the inner ply, removing the portions of the inner ply between said lines of partial severance at each side of the back panel portion and applying the usual hinge and lining sheets to complete the casing.

5. The method of forming casings for loose leaf binders and the like from plies of cardboard in web form having a width substantially equal to the overall width of the casing to be built which comprises, perforating one of said webs in a manner to permit subsequent removal of a portion thereof along narrow zones defining the long edges of the back panel portion of the casing, inserting between the webs strips of thin metal in those portions of the webs which are to become the back and side panels of the casing,

cementing both webs to the metal strip in the back panel portion, cementing the metal strips in the side panel portions to one of the two webs only to form a composite web, transversely severing from said web a length substantially equal to the desired overall length of the casing, applying a cover to the severed length, removing the portions of the perforated ply at said narrow zones, and applying the usual hinge and lining sheets to the severed length to complete the casing.

6. In a loose leaf binder, a casing structure comprising outer back and side panel members formed as an integral sheet, thin metal strips secured respectively to the inner face of each side panel portion and the back panel portion of said sheet, an inner back panel member secured to the metal strip on said outer back panel member to enclose said last named metal strip between said back panel members, inner side panel members having their respective top, bottom, and outer side edges coinciding with the corresponding edges of the side panel portions of said sheet, the inner side edge portions of said inner side panels extending over but free from the metal strips on the outer panel member of said sheet, the inner side edges of said inner side panels being spaced from the side edges of the inner

back panel member to form a single ply hinge zone, and a cover sheet having its edge portions folded over and secured to the inner side panel members to hold the last named members in position.

7. In a loose leaf binder, a casing structure comprising outer back and side panel members formed as an integral sheet, a thin metal strip secured to the inner face of the back panel portion of said sheet, an inner back panel member secured to the metal strip to enclose said strip between the back panel members, inner side panel members having their respective top, bottom, and outer side edges coinciding with the corresponding edges of the side panel portions of said sheet, the inner side edges of said inner side panels being spaced from the side edges of the inner back panel member to form a single ply hinge zone, metal strips positioned between the side panel members adjacent said hinge zones, said last named metal strips being cemented to one only of the side panel members between which it is positioned, and a cover sheet having its edge portions folded over and secured to the inner side panel members to hold the last named members in position.

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CERTIFICATE OF CORRECTION.

Patent No. 2,051,908,

August 25, 1936.

FRANK STANLEY SCHADE.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 2, second column, line 44, claim 4, for "serving" read severing; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 3rd day of November, A. D. 1936.

(Seal)

Henry Van Arsdale
Acting Commissioner of Patents.