March 26, 1935. F. S. SCHADE 1,995,865

LOOSE LEAF BOOK AND METHOD OF MANUFACTURE

Filed April 11, 1934

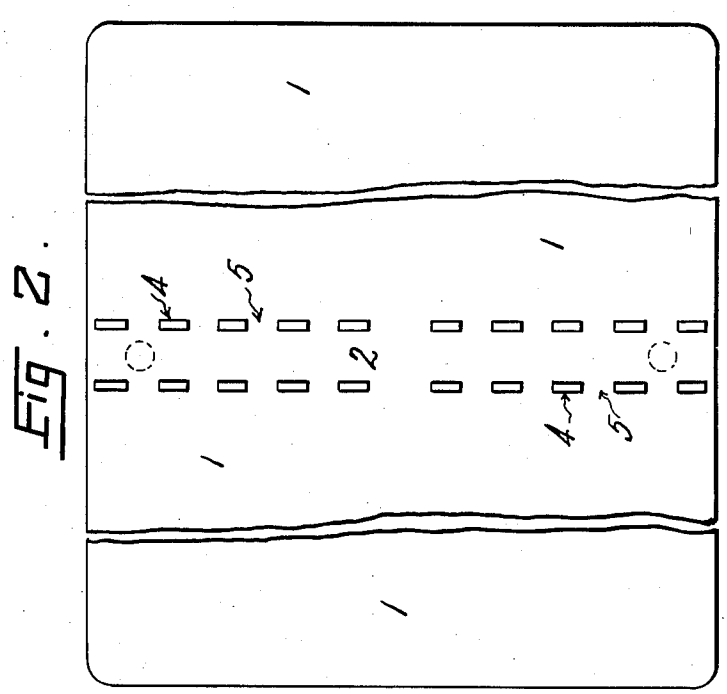

Fig. 2.

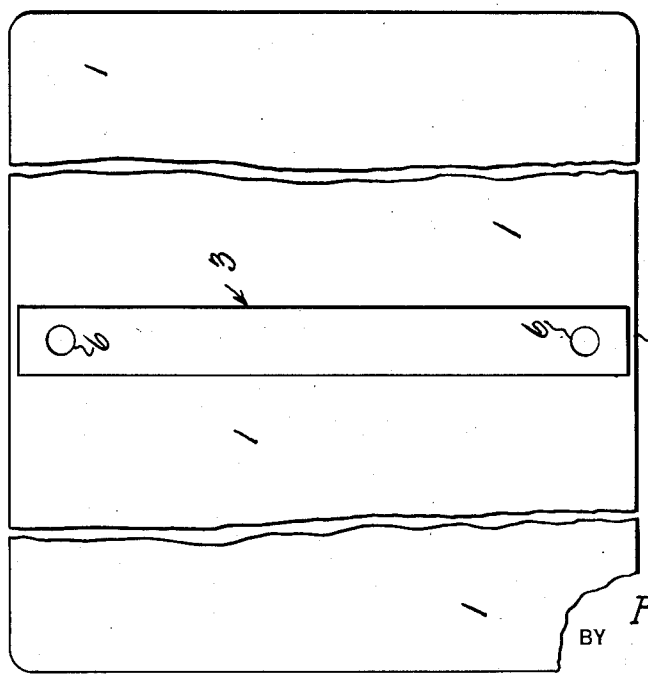

Fig. 1.

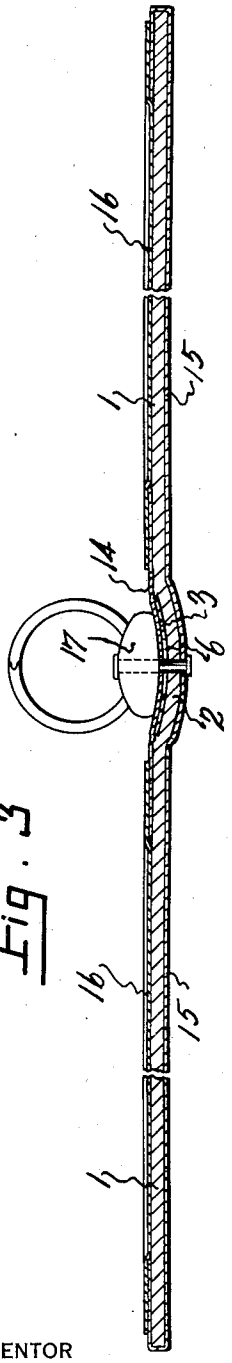

Fig. 3.

INVENTOR
FRANK S. SCHADE
BY Chapin & Neal
ATTORNEYS

Patented Mar. 26, 1935 1,995,865

UNITED STATES PATENT OFFICE

1,995,865

LOOSE LEAF BOOK AND METHOD OF MANUFACTURE

Frank S. Schade, Holyoke, Mass., assignor to National Blank Book Company, Holyoke, Mass., a corporation of Massachusetts

Application April 11, 1934, Serial No. 720,019

6 Claims. (Cl. 129—24)

This invention relates to an improvement in loose leaf books or binders and especially to the method of making them in economical fashion.

I will disclose the features of invention in the accompanying drawing and following description. The prior art of which I am aware will be apparent as the description proceeds.

In the drawing,

Fig. 1 is a plan view of the inside face of the panel arrangement of my improved binder or case before the hinge, finishing strips, and loose leaf mechanism, have been applied;

Fig. 2 is a plan view of the outside face of the same case; and

Fig. 3 is a section through a finished binder sufficiently indicating all the necessary parts desirable to be referred to in the finished article.

The general idea of the invention is to make a low cost binder of better construction than the usual machine-made article. I have done this before by making up the case with two cover panels of separate cardboard sheets and a composite back panel or another cardboard sheet laminated with a thin strip of stiff metal, which panels, with covering and hinge strips were all assembled flat and made into a finished flat case by case making machinery. Afterwards the back panel was curved by a die and the loose leaf mechanism riveted on the back panel. This earlier structure and method is fully disclosed and claimed in my copending application Serial No. 661,909, filed March 21, 1933, and has gone into commercial use.

The new invention discloses a simplification of structure and method by which much the same commercial kind of binder as disclosed in my copending case can be produced in a different and in some respects in a better fashion.

Referring to Figs. 1 and 2, my present structure is there shown in part at an intermediate stage of manufacture. It consists (see Fig. 2) of a single piece of cardboard 1 sufficient to supply the material for two cover panels and one back panel, for a low cost binder. To the back panel portion 2 of this flat single piece of stock I attach a stiff metal plate 3, preferably thin enough so as not to substantially thicken the back panel portion of cardboard. The plate is preferably attached on what will be the inside face of the back panel as seen in Fig. 1.

To attach the plate, its longitudinal edges (see Fig. 2) are each provided with a series of rectangular ears or prongs 4. These (in the form of upstanding prongs) can be pushed through spaced cuts in the hinge lines 5 and bent down against the back panel as shown in Fig. 2. The spaced cuts through the cardboard weaken it along the hinge lines and this weakening effect will cause the cardboard cover panels to bend easily on the hinge lines. If a less number of prongs is desired than that required to weaken the cardboard along the hinge line for the bending of the covers then the single sheet of cardboard can be scored for easy turning on its hinge lines.

In either case it is desirable during manufacture to have the panel portions in a single flat sheet, as I have shown, where one wants to handle as few separate parts as possible in the manufacturing steps.

With the arrangement of Figs. 1 and 2 made up, the next step is to apply the hinge sheet 14, lining sheet 16, and decorative or covering sheet 15. These are indicated in Fig. 3 but it will be understood that they are applied to the case when in the flat form of Figs. 1 and 2.

It is customary in book binding to make up flat cases by automatic machines which assemble the panels, apply the strips for hinges, lining, and covering the case, all at a very low cost for machine operation. To get this low cost the back panel needs to be flat and it is curved afterwards (to the form as shown in Fig. 3) by hot dies when cardboard binders are made.

One advantage of my present structure is that single sheets of cardboard can be made up with a composite back panel portion as shown in special stiff flat form with the thin metal addition whose edges or attaching means define the hinge lines. With the use of such sheets, one can have a simpler and less expensive case making machine (as there is only one instead of three panel sheets to be handled in the machine) to apply the hinge and covering strips. Less labor is involved in handling a single sheet structure of the form shown in Figs. 1 and 2 than in the three panels of my prior construction in preparing for the work of the automatic machine. Thus, both machine and hand labor expense is saved by my present invention.

When the flat cases with hinge, lining, and covering strips are made up as described they are stacked up and rivet holes are drilled through the cardboard of the back panels and strips 14 and 15. The metal elements of those panels are already provided with oversized rivet holes 6 (Fig. 1) when they are stamped out in preparation for making up the composite back panels as already described. With the oversize rivet holes it is not necessary for them to be exactly aligned,

as would be the case if they were not oversize. And this permits a very large number of rivet holes (through the cardboard) to be easily drilled at one time with the cases in stacked form.

The flat cases produced by machine work are transversely curved in their back panel portions 2 by pressure dies, to the shape of Fig. 3. When this has been done and the metal loose leaf mechanism 17 is riveted to back panel in the usual way, the result is, that a binder is now provided at an exceedingly low material, labor, and machine cost which is a very strong one, far superior to the ordinary cheap cardboard type. The commercial competition of this new binder is in the price class of cardboard binders whose back panels are very flimsy cardboard structure. But by my method of construction the article has a metal reinforcement of sufficient area to tie the loose leaf mechanism to the case without danger of the cardboard weakness. Of course the thin metal sheet could be supplied in two or more parts or in skeletonized form rather than as a sheet of full area for the back panel. It is only necessary to supply enough reinforcement on the back panel to give it the rigid stiffness desirable for the attachment of the loose leaf mechanism and so that the latter will not tear loose as it does so quickly in the cheap cardboard binders. It is also desirable to stiffen the back panel cardboard adjacent the ends to avoid the usual "dog-eared" appearance after slight use in low cost binders. I prefer to cover practically the whole of one side of the back panel as I have disclosed the invention for by so doing my operations are simplified and I can make the metal very thin. This is an advantage in making up the cardboard to be operated upon by case making machinery. When my binder is finished, it will be appreciated that the single sheet of cardboard with which I started to supply stock for all three panels has not been deliberately broken apart during the steps of my method. If it breaks apart afterwards it makes no particular difference as all the panels are now joined together by other means than being in a single sheet of cardboard.

Sometimes cardboard cover panels are made of two layers that can slide slightly one on the other. This gives more flexibility to the cover than a single layer of the same panel thickness. When I have referred to a single sheet of cardboard herein and in the claims, I mean to include sheets made up of either one or two layers but handled as a single sheet through my method steps. The idea is to have a single sheet area sufficient to provide for both cover panels and the back panel. In my invention it is immaterial whether the thickness of the single sheet is made up of integral cardboard layers or layers that are more or less free to slide one relatively to the other. In other words, the term single sheet has reference to the area and the handling of all the laminations making up the cardboard panels for one binder, as a single sheet rather than any reference to the character of the laminations and whether they can be separated into two sheets. It will be clear that if I handle the cardboard material in my method exactly as I have described the handling of a single sheet of cardboard, the invention will be used even if two layers of cardboard are slightly attached over the same area so as to be handled exactly as a single sheet of a single integral layer. The difference in the two cases is not in the method but in the flexibility of the final product with respect to the cover panels.

Of course the present invention will be seen as one securing many of the same advantages as my prior invention referred to. But it has the added advantages of still further reducing the labor and machine cost of the article. And it enables me to get a good loose leaf binder on the market that can still further compete successfully with those of lowest cost and of the usual flimsiest construction. The ordinary cheap cardboard binder looks all right when new but breaks down so quickly that it is almost useless from the beginning. One main idea in the effort to produce a better binder of my type at the very lowest cost is to compete in the very lowest priced market, and not leave that field of low priced binders to be supplied by merely cutting the cost by lowering the quality. I have succeeded with this idea by the further simplification of the plan underlying my previous invention and by the additional features herein disclosed. A comparison of the present invention with my previous one will show the ground intended to be covered by the present disclosure.

What I claim is:

1. The method of making a loose leaf binder which consists in starting with a single flat sheet of cardboard large enough to supply stock for the back and cover panels, attaching to said sheet a comparatively thin and flat strip of stiff metal on the back panel area so as to make a composite panel for that area of substantially the same thickness as the cardboard sheet, applying to said flat assembly the usual thin strips of flexible material for finishing the binder case in flat form, pressing the composite back panel to give a permanent curved form and finally attaching the metal loose leaf structure to the finished back panel.

2. The method of making a loose leaf binder which consists in starting with a single sheet of cardboard, applying comparatively thin but stiff sheet metal means in flat form to make a composite back panel on the cardboard with cover panels on opposite sides, applying case finishing strips including hinge elements to said flat panels, pressing the composite back panel and strips to give the case the desired shape, and then attaching metal loose leaf structure to the back panel to finish the binder.

3. The method of making a loose leaf binder which consists in forming a flat thin metal strip with down-turned prongs along its opposite edges, pressing said prongs through a flat sheet of cardboard and bending them over on the opposite side to make a stiff composite strip to serve as the back panel of the binder, the cover panels of which extend from each side of the back panel in the single sheet of cardboard, applying the usual hinge and finishing strips to said sheet to finish the case in flat form, pressing the composite back panel to give it permanent curved form and finally attaching the metal loose leaf structure on the back panel to finish the binder.

4. The method of making a loose leaf binder which consists in starting with a single sheet of cardboard of an area to supply stock for both cover and back panels, attaching a comparatively thin but stiff sheet metal lamination on the back panel area of the cardboard and providing a hinge line on each side of said area while maintaining the single sheet form for the cardboard, applying the usual finishing strips to said assembly all in flat form, pressing the composite back panel into permanently curved form and

then attaching the metal loose leaf structure to the back panel to finish the binder.

5. The method of making a loose leaf binder which consists in starting with a single sheet of cardboard of an area to supply stock for both cover and back panels and maintaining the stock in that form until the binder is finished, applying a comparatively thin but stiff sheet metal lamination to said sheet on its flat back panel area, applying the usual hinge and finishing strips to the cardboard, then pressing the flat composite back panel to give it permanent curved form and finally attaching the metal loose leaf structure to said curved back panel to finish the binder.

6. The method of making a loose leaf book which consists in starting with a single flat sheet of cardboard for supplying the back and cover panels of the book, providing a single comparatively thin but stiff lamination of sheet metal on the flat back panel area to provide for stiffening around rivet holes and at the end portions of that area, applying hinge and finishing strips to the flat sheet formation, then pressing the composite back panel into permanent curved form and finally riveting the metal loose leaf structure to the curved back panel and finishing the book without deliberately breaking up said single sheet of cardboard to make the book panels.

FRANK S. SCHADE.