Sept. 28, 1943. J. SCHADE 2,330,749

RING BINDER CONSTRUCTION

Filed Dec. 3, 1942

Fig. 5.

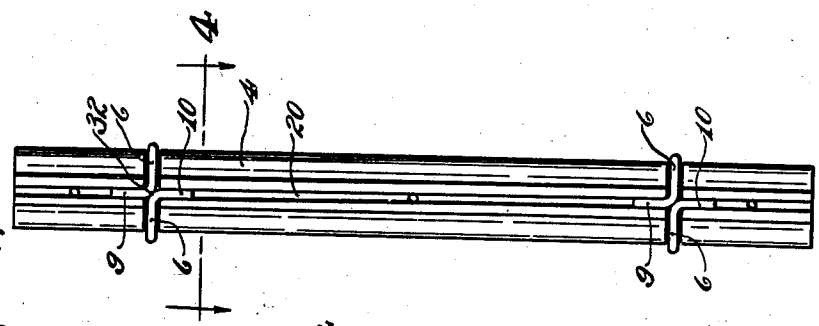


Fig. 3.



Fig. 4.

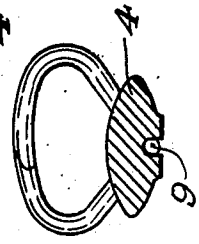


Fig. 6.

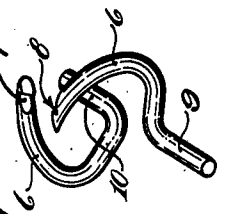


Fig. 2.

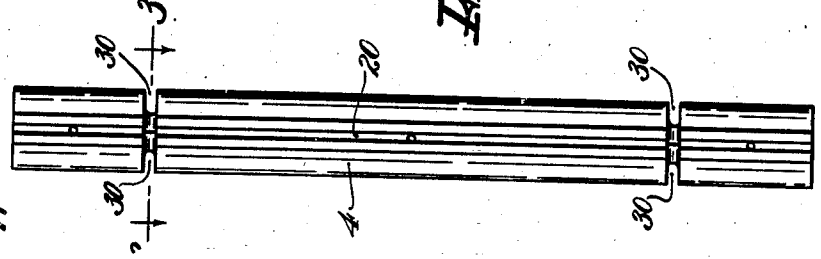
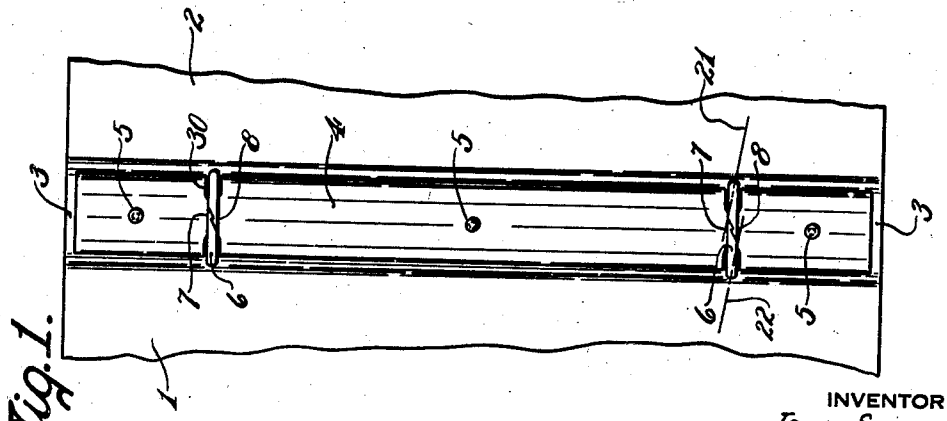


Fig. 1.



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Patented Sept. 28, 1943 2,330,749

UNITED STATES PATENT OFFICE

2,330,749

RING BINDER CONSTRUCTION

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Application December 3, 1942, Serial No. 467,674

2 Claims. (Cl. 129—24)

This invention relates to an improvement in ring binder constructions for loose leaf books. The improvement consists in a combination of detail. It can be best understood from a specific disclosure of the preferred form.

Referring to the drawing—

Fig. 1 is an open plan view of a finished ring binder;

Fig. 2 is a bottom view of the casing strip used for holding the rings;

Fig. 3 is a section on line 3—3 of Fig. 2;

Fig. 4 is a section on line 4—4 of Fig. 5;

Fig. 5 is like Fig. 2 but with the rings in place; and

Fig. 6 is a detail view of the ring halves of one ring removed from its casing strip.

The general purpose of the improvement is to provide a simple structure, to be made at low cost and adapted for using various materials, as metal, wood, and plastic.

The finished binder shown in Fig. 1 consists in covers 1 and 2, hinged to back panel 3, the casing strip 4 riveted at 5 to the back panel 3, and the rings 6.

These rings 6 are each constructed to operate generally like those, for example, in Patent 901,076 of 1908 or in Patent 1,365,363 of 1921. Considering the two ring halves of Fig. 6: their respective ends are made hook-shaped in complementary fashion, as at 7 and 8, see Fig. 1. This provides a kerf joint. When the other ends 9 and 10 of the ring halves are suitably held, the ring as a whole can be closed and opened as such rings are in the prior art. For example, if ends 9 and 10 were suitably tied together by a hinge pin joint, the jointed ring would operate as shown in Patent 901,076 or Patent 1,365,363. Such operation involves the two ring halves being mounted in slightly offset planes; a slight strain will bring them together when desired, for joining the ends as at 7 and 8. The operator readily snaps the ends together, as seen in Fig. 1, and then, when released, the ring halves will strain toward their normal offset position and keep the ends "buttoned up" until they are manipulated for release and opening. This operation is explained in more detail in said Patent 1,365,363, and is per se well known in the binder ring art. That is to say, the type of ring and the way to manipulate it are old.

The new feature of my disclosure is in the combination of this type of ring with a ring holding strip, all arranged for a particularly simple, quick, and inexpensive assembly. I will now explain this.

I form the ring halves, each with an offset portion, 9 for one and 10 for the other, one extending oppositely to the other, see Fig. 6. Thus, when the halves are brought together the offset portions extend to opposite sides of the general plane of the ring, see Fig. 5.

These offset portions are carefully positioned so that this result is attained. One lies in groove 20 with its ring half in plane indicated by line 21. The other lies in groove 20 with its ring half in plane indicated by line 22. When the ring halves are brought together for locking, there is a slight twist, just enough to bring planes 21 and 22 together for the ring halves to lock in the same plane.

It will be seen that the ring holding strip 4 is extremely simple; it need be but a strip of wood cut to length and grooved, all of which can be done on an automatic wood working machine. Or the strip may be molded from plastic material.

The ring halves can be bent up out of metal and, of course, metal is suitable for the material of the ring halves. The structure of this kind of ring, i. e., the one which snap locks as described, is particularly well adapted to be made of plastic. When the rings are made of plastic the whole binder may be made without metal, even rivets of metal can be avoided.

To assemble my structure the ring halves are very easily placed in position, as indicated in Fig. 5. The offset 9 fits in groove 20 and offset 10 fits in groove 20. The ring portions 6 fit in transverse grooves 30. The parts are positioned by merely placing them in the grooves, then covering the grooves with back panel 3, and riveting at points 5. Of course, the material of the rings should crowd into the grooves to give a good but not too tight a fit. That is to say, the ring halves need to be loose enough to move. I have indicated in Fig. 5 a ring and groove fit adapted to maintain a crowding contact at point 32. With the back portion 3 covering this point and the material arranged substantially as shown, the parts will work well. It is quite possible to hold each ring half separate from the other so far as the back mounting is concerned. This assembly is placed on the back panel 3 and riveted in position. While two rings are shown, the structure is adapted to any desired number.

A characteristic of the structure is that very little strain is ever put on any part in the operation of the book. Thus, while the rings lock by snap action, very little spring is needed in the material to get the action. The whole structure is adapted to be made of metal, wood, or plastic,

or parts of one and the other. It will work equally well. And it is a particularly easy structure to make, assemble, and use.

What I claim is:

1. A ring binder comprising a holding strip having on the under side a longitudinal and transverse grooves, ring halves having offset legs to fit in said longitudinal groove and arched portions to fit in said transverse grooves and extend therefrom to meet above the holding strip, the ends of complementary ring halves being provided with kerf joints, and a binder case whose back portion carries said holding strip.

2. A ring binder comprising a binder case, a long solid piece forming a strip of generally flattened-out shape in transverse section with its bottom side curved to fit a curved back panel of the binder case, said bottom side having a longitudinal groove intersected by a plurality of transverse grooves, the latter intersecting the upper edge margins of the strip, ring halves, each one of which is bent to lie partly in said longitudinal groove and partly in a transverse groove and be held therein for turning to open and close their parts, the strip with the ring halves mounted therein being mounted on the back panel of the binder case and the under side of the grooves being closed, all for the purpose described.

JOHN SCHADE.