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C. D. TRUSSELL

2,612,166

END LOCK FOR RINGS OF MECHANICAL BINDINGS

Original Filed Aug. 6, , 1949

Fig. 1.

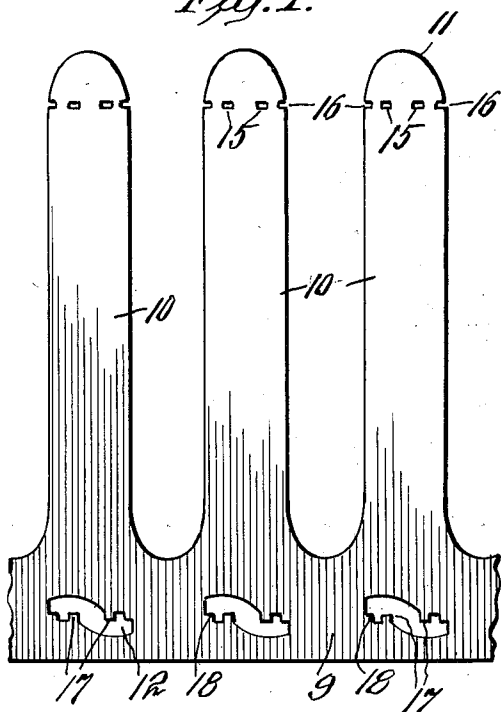


Fig. 2.

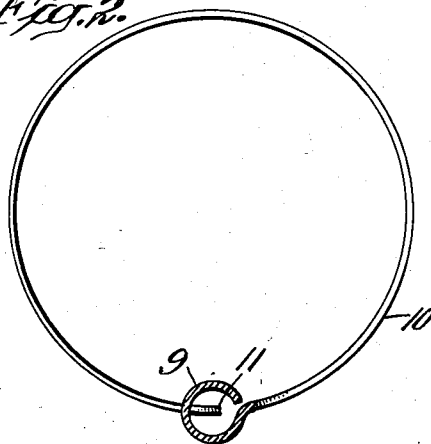


Fig. 3.

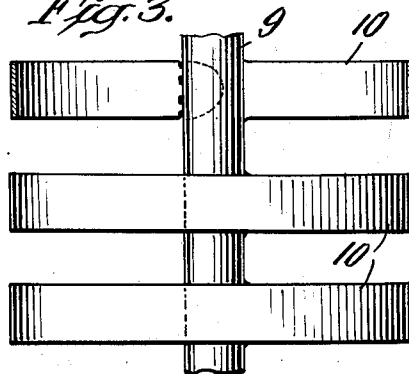


Fig. 4.

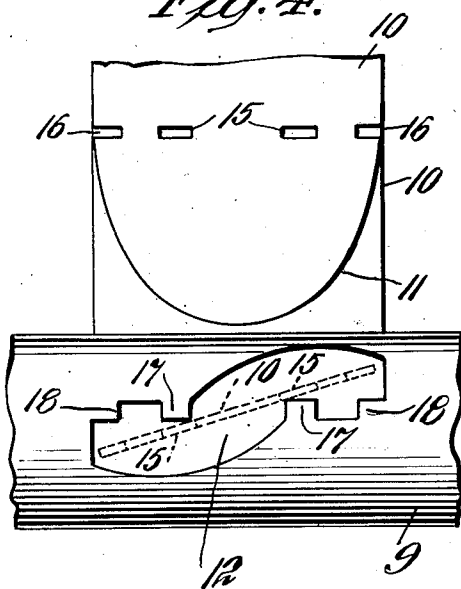
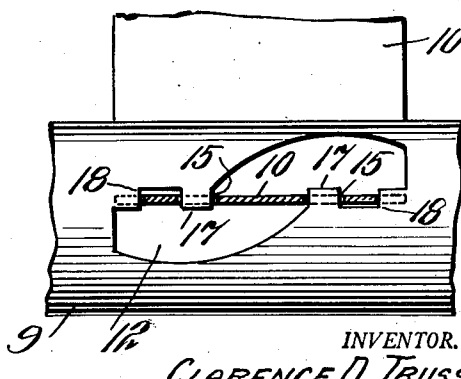


Fig. 5.



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END LOCK FOR RINGS OF MECHANICAL BINDINGS

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Original application August 6, 1949, Serial No. 108,903. Divided and this application January 29, 1952, Serial No. 268,820

2 Claims. (Cl. 129-1)

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The invention herein disclosed relates to mechanical bindings of the type covered in Patent No. 2,502,493 of April 4, 1950, and in which one edge of a strip of sheet material is rolled to form a tubular backbone, the opposite edge having integrally attached fingers which can be curled toward the tubular backbone into closed ring formation.

The present invention concerns the securing of the free ends of the fingers to the tubular backbone in the closed, ring forming relation, and is a division of copending patent application Serial No. 108,903, filed August 6, 1949, issued as Patent No. 2,595,427.

Particular objects of the invention are to provide simple and effective means for locking the free ends of the ring forming strips to the backbone structure and which will automatically interlock and secure themselves by the mere act of closing the rings.

Other important objects of the invention are to provide an end lock for the rings which while of a generally permanent character may, if occasion requires, be opened to release the rings, and this without destroying the lock.

Further objects of the invention are to provide a lock construction of the type and character indicated which will be an integral part of the structure, which may be provided at low cost and which will be commercially practical and satisfactory in every way.

Other desirable objects and the novel features through which the purposes of the invention are attained are set forth and will appear in the course of the following specification.

The drawing accompanying and forming part of the specification illustrates a present practical embodiment of the invention. Structure, however, may be modified and changed as regards the immediate illustration, all within the true intent and scope of the invention as hereinafter defined and claimed.

Fig. 1 in the drawing is a broken plan view illustrating a portion of a binder blank having the invention incorporated therein;

Fig. 2 is an enlarged broken and part sectional end view of one of the completed bindings;

Fig. 3 is a broken plan view of the same showing two rings completely closed and locked and a third ring, in section, nearly closed and about to be automatically interlocked with the rolled tubular backbone portion of the binder;

Fig. 4 is a further enlarged broken detail of the tubular backbone and one of the ring forming fingers showing the interlocking elements of

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the same and showing in broken lines how the end of the flexible finger has to be twisted to enter the slot provided therefor in the side of the tubular backbone;

Fig. 5 is a broken part sectional detail showing the parts in fully interlocked engagement.

Figs. 1, 2 and 3 show how the binding is made up of a one-piece blank of sheet material having an edge strip portion 9, rolled into tubular formation, and integrally attached, spaced, parallel ring forming fingers 10 projecting from the opposite edge and provided with tapered, rounded or bluntly pointed free ends 11 which are inserted through slots provided in the rolled base strip.

The lock for the ring ends is provided by momentary deformation and straightening of the tips of the fingers as they pass through the slots, with companion parts located to interlock as the finger tips snap from the deformed condition back to the original, generally flat or straight formation.

Fig. 4 shows the companion interlocking parts as provided by two short, transversely aligned slots 15 and two similarly transversely aligned edge notches 16 near the free end of the ring forming strip in back of the rounded edge 11, to engage, respectively, over diagonally opposite lugs 17 on opposite sides of the diagonally extending slot 12 in the side of the tubular backbone and over diagonally opposite shoulders 18 at the opposite ends of the slot, after the finger strip has first been twisted transversely, as shown in the broken lines, to pass it through the slot far enough to register said slots and notches with said locking lugs and shoulders.

With this construction it is possible to close and lock the fingers simply by bending them into ring formation and then twisting and forcing the ends of the same through the inclined or diagonal slots in the base strip. This may be accomplished by hand or in special ring closing jigs or dies such as disclosed in copending patent application Serial No. 232,347, filed June 19, 1951.

While the lock construction disclosed will hold the rings permanently secured against any accidental or unintentional disengagement, it is nevertheless possible to release the rings by twisting the ends of the same back into the inclined relation shown in dotted lines, Fig. 4, and then withdrawing them from the slots.

The binding disclosed may be of plastic, sheet metal or other suitable sheet material and the lock feature may be incorporated at practically no additional cost, since it is an integral part of

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the sheet structure and may be produced at the time of blanking out the bindings.

The slight deformation, bending or twisting required for passing the ends of the rings through the inclined slots into interlocked position, does not injure or impair the springy character of the normally flat strip sheet material of which the binding is formed. The binder, when closed and locked, may be considered generally as a permanent binding, but the structure permits of the unlocking and opening of the binder rings, if that be required.

What is claimed is:

1. A mechanical binding comprising a strip of sheet material rolled into generally tubular formation and having spaced, longitudinally extending slots along one edge portion and spaced, substantially parallel ring forming strips projecting from the opposite edge portion in position to have the free ends of the same enter said slots, said slots being shaped to enforce bending of said ring forming strips to enter the same and companion interlocking elements on the edges of said slots and on the end portions of the ring forming strips located to interlock on restoration of said ring forming strips to normal shape following the bending of the same required to enter said slots, and including diagonally opposite projections on the edges of said slots positioned to im-

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part transverse twist to said ring forming strips and the latter having openings therethrough to accommodate said projections.

2. A mechanical binding comprising a strip of sheet material rolled into generally tubular formation and having spaced, longitudinally extending slots along one edge portion and spaced, substantially parallel ring forming strips projecting from the opposite edge portion in position to have the free ends of the same enter said slots, said slots being shaped to enforce bending of said ring forming strips to enter the same and companion interlocking elements on the edges of said slots and on the end portions of the ring forming strips located to interlock on restoration of said ring forming strips to normal shape following the bending of the same required to enter said slots, and including diagonally opposite projections on the edges of said slots positioned to impart transverse twist to said ring forming strips and the latter having openings therethrough to accommodate said projections and notches in opposite edges transversely aligned with said slots and shoulders at opposite ends of the slots engageable in said notches in the edges of the ring forming strips.

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No references cited.