April 24, 1945. L. J. THOELE 2,374,395

BINDER

Original Filed April 11, 1941

Fig. 1

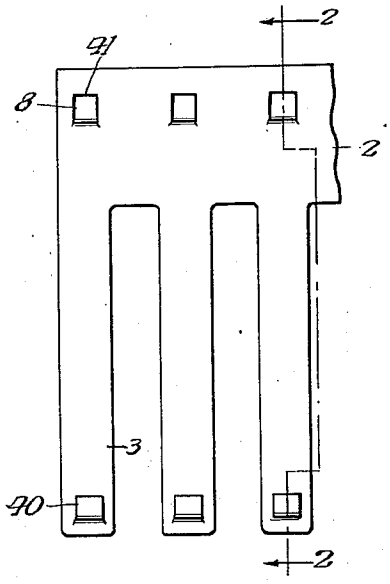


Fig. 2

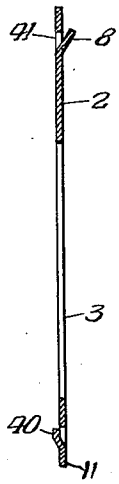
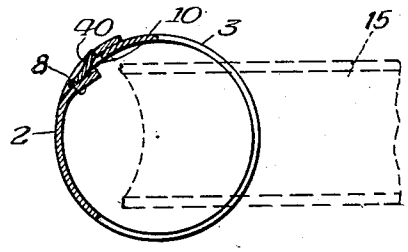


Fig. 3



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UNITED STATES PATENT OFFICE

2,374,395

BINDER

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Original application April 11, 1941, Serial No. 388,138. Divided and this application April 19, 1944, Serial No. 532,011

4 Claims. (Cl. 129—1)

This application is a division of my application Serial No. 388,138, filed April 11, 1941.

This invention relates to binders in general and, more particularly, to mechanical binders of the type adapted to be inserted through aligned perforations in a stack of pages for binding them together.

The binder of the present invention is of the type which comprises a back from which extend a plurality of fingers that are curled into loops, the free ends of the fingers overlapping the back. When binders of this type are made for large or heavy books or stacks of pages they must, of course, be made comparatively stiff. When so made it frequently happens that a tooth or series of teeth are forced along the back beyond their normal position and to a distance such as to exceed the elastic limit of the material. This permanently deforms the individual fingers or loops that have been thus forced beyond their normal position, and destroys the aesthetic appearance of the binder and may also interfere with the turning of the bound pages. It is one of the objects of the present invention to provide a binder which will overcome this difficulty by preventing inward movement of the teeth or fingers in the loop beyond their normal position.

It is a further object of the present invention to provide a binder of the above mentioned character with means for preventing the accidental withdrawal of the ends of the fingers from the loop, that is, for preventing the accidental opening of the loop, while at the same time permitting the loop to be opened when it is desired to do so. In accordance with this embodiment of the invention the rings or fingers are provided with projections adjacent their end, which projections enter into slots in the back. By this arrangement a direct outward pull on the fingers is ineffective to withdrawn the fingers from the loop. The fingers may, however, be withdrawn from the loop by first pressing them away from the back to withdraw the finger tab from the slot in the back and then uncurling the finger or fingers. It is a still further object of the present invention to provide such a binder wherein the tab on the finger which limits accidental retraction of the finger cooperates with the very slot that is formed by the tab in the back for limiting the inward movement of the finger in the loop.

It is a still further object of the present invention to provide a binder of the above mentioned character wherein the fingers are held against inward movement in the loop and yet are smooth along all of their edges and surfaces and free of outer projections from any of the surfaces, thus facilitating insertion of the smooth fingers into or removal from aligned perforations in a stack of sheets to be bound together.

While the structure of the present invention is particularly applicable to binders, it is not limited to binders. Individual rings or groups of rings may be provided to act as binders for securing any other parts together. For instance, individual rings may be used as key rings, napkin rings, or the like. Also, individual rings or groups of rings may be used as supports for hanging curtains or the like.

The attainment of the above and further objects of the present invention will be apparent from the following specification taken in conjunction with the accompanying drawing forming a part thereof.

In the drawing:

Figure 1 is a plan view of a blank from which a binder of the present invention is to be made;

Figure 2 is a sectional view taken along the line 2—2 of Figure 1 and looking in the direction of the arrows; and

Figure 3 is a transverse sectional view through a binder inserted through a stack of pages.

The blank from which the binder is made consists of a comparatively thin sheet of spring steel cut or stamped to the shape illustrated in Figure 1 to provide a back 2 having a plurality of uniformly spaced fingers 3, the width of the space between fingers being the same as the width of the fingers. The fingers 3 are smooth, and the corners are rounded at their ends and the material is also rounded at the corners where the fingers extend from the back 2. In line with each finger 3 the back 2 has a tab 8 stamped outwardly therefrom a short distance. The distance that the tab extends is made only slightly in excess of the thickness of the material. The tab 8 forms a V-shaped space 10 between the tab and the adjacent part of the back 2. When the individual fingers are curled the ends 11 of the fingers remote from the back 2 enter into the V space 10, as illustrated in Figure 3, thus firmly holding the ends of the fingers against collapse inwardly of the loop. At the outer end of each finger there is formed a tab 40 which extends from the plane of the blank in the direction opposite to the direction of the tab 8.

The blank may be curled to a tubular shape, as illustrated in Figure 3, after the ends of the fingers 3 are inserted through aligned perforations in a stack of pages or sheets 15. If desired, how-

ever, the blank may be curled to the shape approximately that illustrated in Figure 3 before it has been inserted through the pages and then the blank may be spread apart to move the fingers 3 away from the back 2 a sufficient distance to permit the fingers 3 to enter the perforations in the stack of pages. The binder may then be permitted to recurl under its natural resiliency or may be forced back beyond its previous position until the end 11 of the binder extends into the V-shaped slot 10, and the tab 40 extends into the slot 41 formed where the tab 8 was struck. This thus limits subsequent withdrawal of the curled fingers 3 from the back 2. At the same time the tab 8 holds the finger 3 against inward movement on the inner periphery of the back.

In the preferred construction the tab 40 extends from the surface of the finger 3 of the blank an amount not exceeding the thickness of the metal of the blank. When the blank is curled, as illustrated in Figure 3, the tab 40 does not, therefore, project beyond the outer curved surface of the back 2 and cannot scratch or otherwise mar a surface upon which the binder is placed.

It is within the purview of the present invention to form individual fingers, of the construction illustrated in Figure 2, into rings as illustrated in Figure 3, if desired.

In compliance with the requirements of the patent statutes I have here shown and described a preferred embodiment of my invention. It is, however, to be understood that the invention is not limited to the precise construction here shown, the same being merely illustrative of the principles of the invention. What is considered new and desired to be secured by Letters Patent is:

1. A binder comprising a back having a plurality of fingers extending therefrom and curled to form with the back closed loops of more than 360° with the fingers on the inside of the loops, projecting tabs extending inwardly from the back in alignment with the fingers, the free end of each finger abutting against the tab aligned therewith for limiting the extent of overlap of the finger and the back and each finger having adjacent the free end thereof an outwardly projecting tab entering into and locking within the notch formed in the back by the opposite inwardly projecting tab.

2. A binder comprising a back having a plurality of fingers extending therefrom and curled to form with the back closed loops with the fingers on the inside of the loops, the outer surface of each finger having a tab projecting outwardly therefrom, tabs projecting inwardly from the back intermediate the width thereof and in alignment with the fingers and constituting stops for limiting the curling of the fingers, said finger projecting tabs extending into openings in the back and projecting from the fingers an amount not exceeding the thickness of the binder material whereby the outwardly projecting tabs terminate within the outer periphery of the loop.

3. A tubular member comprising a strip of spring material having a back from which extend a plurality of fingers, each finger being curled to form with the back a loop of more than 360°, that end of each finger which is remote from the edge of the back from which the finger extends being curved along the same curvature as the rest of the loop to the very end of the finger, the back having inward projections forming abutments for the fingers and limiting the extent of overlap of the fingers and the back, the end of each finger extending between the back and the projection and being embraced by the back and the projection, and each finger having adjacent its free end a projection extending outwardly therefrom an amount which is not in excess of the thickness of the member and which extends into an opening in the back to hold the respective fingers against retraction.

4. A ring comprising a strip of spring material formed into a closed loop of more than 360°, at each end of the strip there being formed a tab bent from the surface of the strip to leave an opening in the strip where the tab is formed, the tabs at the opposite ends of the strip projecting one inwardly and one outwardly of the loop, the inwardly projecting tab constituting an abutment for the opposite end of the looped strip, which opposite end extends on the inside of the loop, and the outwardly projecting tab extending into the opening formed by the inwardly projecting tab, said outwardly projecting tab extending from the surface from which it was struck an amount not exceeding the thickness of the strip of spring material, whereby said outwardly projecting tab terminates within the outer periphery of the ring loop leaving said loop free of outward projections.

LAWRENCE J. THOELE.