May 9, 1939. E. A. TRUSSELL 2,157,872

BINDER

Filed June 26, 1936

FIG. 1

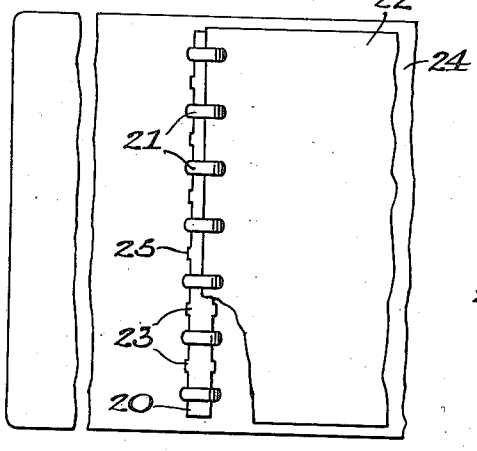


FIG. 3

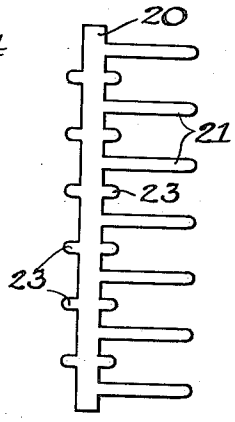


FIG. 4

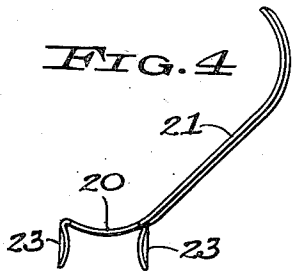


FIG. 5

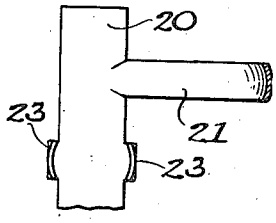


FIG. 2

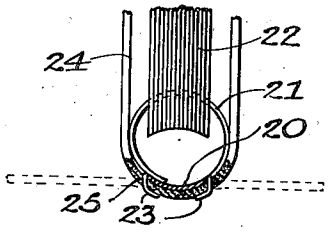


FIG. 6

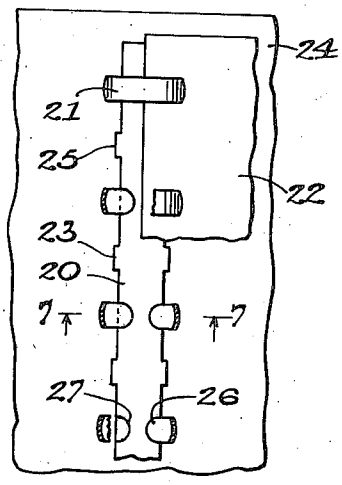


FIG. 8

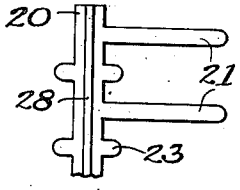


FIG. 11

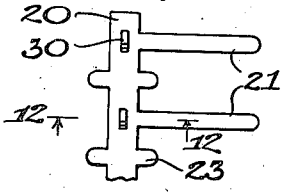


FIG. 9

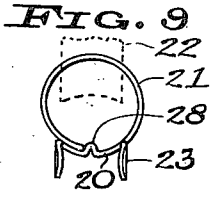


FIG. 12

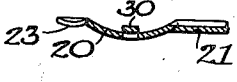


FIG. 7

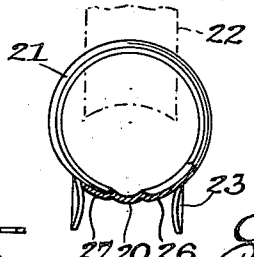


FIG. 10

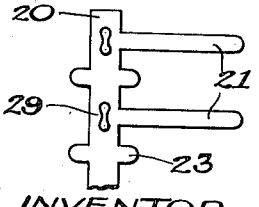


FIG. 13

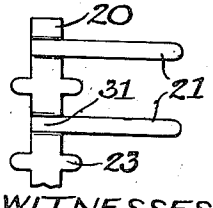
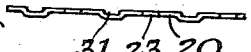


FIG. 14



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2,157,872

BINDER

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Application June 26, 1936, Serial No. 87,415

7 Claims. (Cl. 281—25)

The invention relates to binders for note-books and the like, and has for an object the provision of an improved binding device of strong, light-weight and inexpensive construction and capable of easy and secure attachment to a group of sheets and to a cover.

Another object of the invention is to provide a binding device having simple but effective means for positioning sheet-holding rings formed on the device.

A further object of the invention is to provide a cover-attaching binding device which will facilitate the hinging or bending of the cover.

The invention further consists in the several features hereinafter described and claimed.

In the accompanying drawing, illustrating certain embodiments of the invention,

Fig. 1 is a plan view of a note-book embodying a binding device of the invention, the note-book cover being opened flat;

Fig. 2 is an end view, partly in section, of the note-book in closed position, an open position of the cover being shown in dotted lines;

Fig. 3 is a plan view of a metal blank for the binding device;

Fig. 4 is an end view of the binding device after being formed to an intermediate stage ready to receive the sheets and cover;

Fig. 5 is a plan view of the binding device of Fig. 4, parts being shown in section;

Fig. 6 is a plan view of a note-book embodying a modified form of binding device, the note-book cover being opened flat, and parts of the binding device being broken away and parts being shown in section;

Fig. 7 is a sectional view of the binding device of Fig. 6, taken on the line 7—7 of Fig. 6, but before attaching the cover;

Fig. 8 is a plan view of another modified form of binding device;

Fig. 9 is an end view of the binding device of Fig. 8 after forming the sheet-retaining rings;

Fig. 10 is a plan view of still another modified form of binding device;

Fig. 11 is a plan view of a further modified form of binding device;

Fig. 12 is a sectional view taken on the line 12—12 of Fig. 11;

Fig. 13 is a plan view of an additional modified form of binding device, and

Fig. 14 is an edge view of the binding device of Fig. 13.

In each form of the invention illustrated, 20 designates an elongated sheet metal back plate or strip, preferably curved in cross-section and presenting a concave inner face and a convex outer face. To one edge of the plate are integrally connected a number of spaced parallel fingers 21 which are preferably curved or crowned in cross-section, as seen in Figs. 5 and 6, and which are formed into rings or loops for holding thereon sheets or leaves 22, each sheet being suitably perforated to receive the ring-forming fingers. Each ring-forming finger has approximately the same center of curvature as the back plate. Integrally connected to the opposite side edges of the back plate are a number of bendable prongs 23, which are passed through the flexible back-forming portion of a cover 24, and are clinched back against the cover to secure the back plate to the cover. At one side edge of the back plate the prongs 23 alternate with the ring-forming fingers 21. The prongs 23 are arranged in transversely aligned pairs and pass through slots or perforations 25 in the cover, the slots being formed by the penetration of the prongs through the cover. The slots are arranged along a pair of spaced parallel lines defining bending lines for the cover, and are substantially aligned with the bending lines. The bending or hinging of the cover is thereby facilitated. The prongs 23 are preferably curved in cross-section as seen in Figs. 4 and 5, being concave at their inner sides. This configuration insures penetration of the prongs through the cover material without danger of buckling, and results in improved clinching of the prongs, as the bending will occur near the back plate, and the edges of the outer portions of the prongs will be more or less imbedded in the cover material, the concave faces of the prongs being in engagement with the outer face of the cover. A neat appearance is also obtained. The back plate blank is pressed and bent to the configuration indicated in Fig. 4, in readiness to be secured to the cover and to receive the paper.

In the form of the invention shown in Figs. 1 to 5, the free ends of the ring-forming fingers 21 overlap the inner concave face of the back plate, as best seen in Fig. 2, thus preventing separation of the sheets from the fingers. The fingers are resilient, and pressure applied to the closed note-book, as by placing a weight thereon, will temporarily contract the rings without permanent change of shape, the free ends of the ring-forming fingers being movable inwardly from their normal positions.

In the form of the invention shown in Figs. 6 and 7, the opposite edge portions of the back plate have pressed therein symmetrical embossments 26 and 27. The embossments 26 form the

inner ends of the crowned ring-forming fingers while the embossments **27** form pockets or recesses which receive and locate the free ends of the fingers, and if desired form stops for the free ends of the fingers. The opposite side edges of the pockets or recesses prevent shifting of the finger ends longitudinally of the back plate. The symmetry of the embossing avoids warping of the back plate during the pressing operation.

In the form of binding device shown in Figs. 8 and 9, the sheet metal back plate has a central longitudinal pleat or fold **28** at its inner face forming a stiffening rib. If desired, the rib may also form a stop for the free ends of the ring-forming fingers which overlap the inner face of the plate.

In the binding device shown in Fig. 10, the sheet metal back plate is provided with embossments **29** to form stops for the free ends of the ring-forming fingers, the embossments having concave-edges forming recesses to locate the ends of the fingers.

In the form of binding device shown in Figs. 11 and 12, embossments **30** are formed on the inner face of the back plate to constitute stops for the ring-forming fingers **21**, the plate being slitted to present sharp stop shoulders on the raised embossments and to facilitate the formation of the embossments.

In the form of binding device indicated in Figs. 13 and 14, the back plate has formed therein transverse channels **31**, which form recesses to receive and position the free ends of ring-forming fingers **21**.

What I claim as new and desire to secure by Letters Patent is:

1. A binding device comprising a back member having sheet-holding ring-forming fingers integrally formed thereon along one edge, and having recesses to receive and laterally position the free ends of said fingers, the opposite sides of said recesses confining said finger ends against movement longitudinally of said back member.

2. A binding device comprising a back member having sheet-holding ring-forming fingers integrally formed thereon along one edge, and having pocket-forming embossments to receive and laterally position the free ends of said fingers, said embossments confining said finger ends against movement longitudinally of said back member.

3. A binding device comprising a back member having sheet-holding ring-forming fingers integrally formed thereon along one edge, and having transverse channels to receive and position the free ends of said fingers, said channels confining said finger ends against movement longitudinally of said back member.

4. A binding device comprising a back plate having sheet-holding ring-forming fingers integrally formed thereon along one edge, the free ends of said fingers overlapping the other edge portion of said plate and slidably engaging a face of said plate, and the plate having portions forming stops to limit the overlapping of said fingers with respect to the plate.

5. A binder comprising a foldable cover, a back plate rounded in cross-section to present a convex face engageable with the inner face of the cover, said plate having clinchable cover-attaching prongs integrally connected to its opposite side edges, and further having a plurality of spaced sheet-holding ring-forming fingers integrally connected to one of its side edges, the free ends of said fingers lapping the concave inner face of said plate.

6. A binding device comprising a back plate having embossments at opposite side edges and having sheet-holding ring-forming fingers integrally connected to one of said side edges, the embossments at one side edge forming the attached ends of said fingers and the embossments at the other side edge forming pockets to receive and latrally position the free ends of said fingers, said pockets confining said free ends of the fingers against movement longitudinally of the plate.

7. A binder comprising a cover having a flexible back, a sheet metal back plate curved in cross-section and having a convex surface abutting the inner face of said cover back, said plate having cover-attaching prongs along opposite side edges and having sheet-holding ring-forming fingers integrally formed thereon along one side edge, said ring-forming fingers throughout their length having approximately the same center of curvature as said back plate, and the free ends of said fingers lapping the inner side of the other edge portion of said curved plate.

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