

April 9, 1935.

J. BIRBAUM

1,997,447

LOOSE LEAF BINDER OPERATOR

Filed May 12, 1934

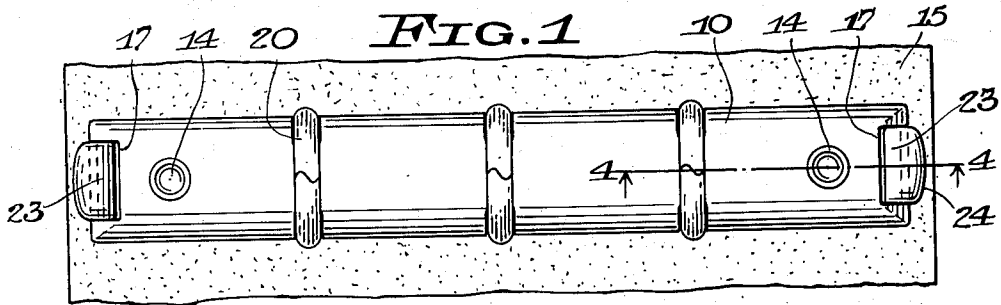


FIG. 2

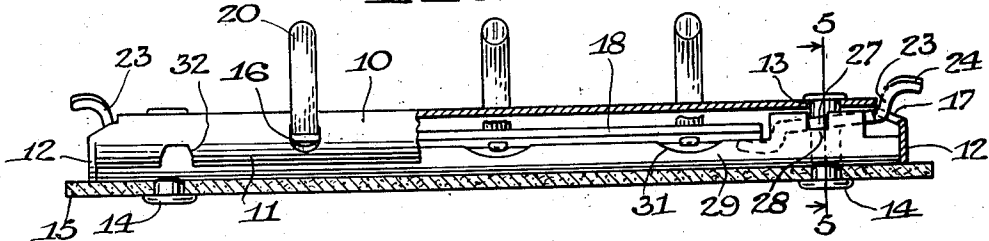


FIG. 3

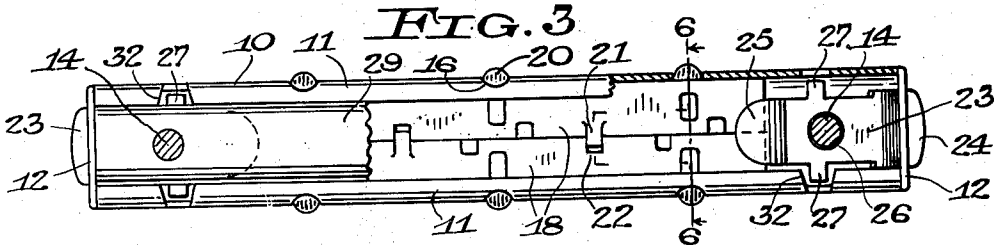


FIG. 8

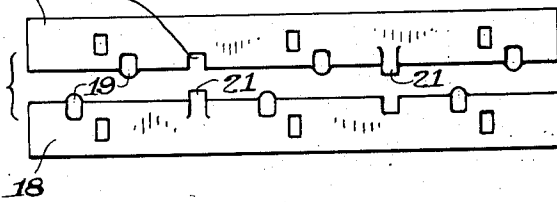


FIG. 4

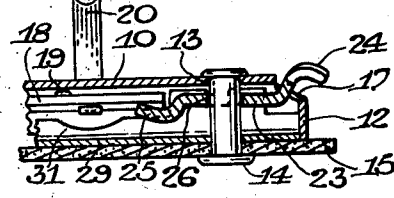


FIG. 6

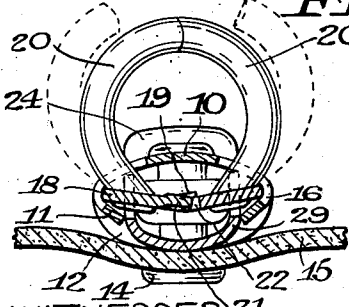


FIG. 7

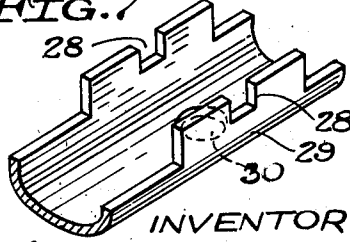
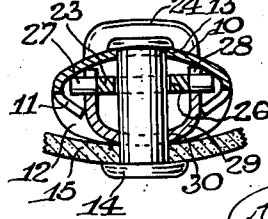


FIG. 5



WITNESSES
 L. E. Sullivan
 C. L. Neal

INVENTOR
 Joseph Birbaum,
 By R. J. Caldwell
 ATTORNEY

UNITED STATES PATENT OFFICE

1,997,447

LOOSE LEAF BINDER OPERATOR

Joseph Birbaum, West Allis, Wis., assignor to
George Seelman & Sons Company, Milwaukee,
Wis., a corporation of Wisconsin

Application May 12, 1934, Serial No. 725,240

5 Claims. (Cl. 129—24)

The invention relates to loose leaf binders of the type in which complementary arched prongs or hooks are carried on a pair of spring-pressed toggle plates or bars capable of being sprung over center in either direction to hold the prongs in open or closed position.

An object of the invention is to provide a strong and durable binder of this type in which the toggle members are urged to prong-opening position by rockable levers so constructed and mounted as to facilitate assembly and to permit economical manufacture.

Another object of the invention is to provide a binder in which the toggle plates or bars, preferably duplicates, are formed at their adjacent longitudinal edges with interfitting parts so arranged as to prevent relative endwise shifting of the plates in either direction, thus avoiding misalignment of the complementary prongs.

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

In the accompanying drawing,

Fig. 1 is a top plan view of a loose leaf binder embodying the invention;

Fig. 2 is a side view of the binder mechanism, parts being broken away and parts being shown in section;

Fig. 3 is a bottom view of the binder mechanism, parts being broken away and parts being shown in section;

Fig. 4 is a sectional view taken along the line 4—4 of Fig. 1, the parts being shown in unlocked position;

Fig. 5 is a sectional view taken along the line 5—5 of Fig. 2;

Fig. 6 is a sectional view taken along the line 6—6 of Fig. 3;

Fig. 7 is a perspective view of an end portion of a channel member forming part of the device, and

Fig. 8 is a detail view of the toggle plates.

In the drawing, 10 designates a frame comprising a resilient sheet metal housing or cover plate having the usual curved trough-like cross-section and provided with inwardly bent opposite side edges 11 and down-turned end flanges 12. Near its opposite ends the housing has openings 13 to receive rivets 14 by which the housing is fastened to the usual book cover 15. At opposite side edges of the housing are formed registering pairs of transverse slots 16, and at opposite ends of the housing rectangular openings 17 are provided.

Within the housing are placed a pair of sheet metal toggle plates or bars 18 with their inner

longitudinal edges in rockable engagement with each other and their outer longitudinal edges in rockable engagement with the side edges of the housing. The toggle plates 18 are duplicates and are provided along their abutting edges with the usual pinched lips or lugs 19 overlying the edge portions of the plates to maintain the rocking engagement of the plates. The plates 18 have rigidly secured thereto, as by riveting, the usual arched prongs or hooks 20 in complementary registering pairs passing loosely through the slots 16 in the housing 10, the free ends of the complementary prongs having an interfitting tongue-and-groove engagement.

In order to prevent relative endwise shifting of the prong-carrying plates 18, a lug 21 is pinched from the inner edge of each plate to fit within a notch 22 cut in the inner edge of the other plate, the lug and notch of each plate being so located that they will properly interfit with those of the duplicate plate. In this manner, the complementary prongs or hooks on the toggle plates are kept in register to insure proper closing, and assembly of the device is facilitated.

Operating levers 23 are provided at each end of the housing 10 for springing the toggle plates 18 upwardly to thereby open the prongs 20. Each operating lever, consisting of a sheet metal stamping, has a curved finger piece 24 projecting through the opening 17 and has a downwardly offset curved inner end 25 engageable with the bottom faces of the end portions of the toggle plates 18. The rivet 14 passes through an opening 26 formed in the lever adjacent the pivotal axis of the lever. At opposite parallel side edges the lever is provided with aligned trunnions or tongues 27. The opening 26 is adjacent the rocking axis of the lever. The trunnions 27 are fulcrumed in notches 28 formed in the upper edges of the opposite side flanges of a sheet metal channel member 29, which extends longitudinally of the housing member 10 and fits between the inturned side edges 11 of the housing member, as seen in Fig. 5. The channel member 29 is preferably rigid and has a curved bottom portion provided with openings 30 for the rivets 14. The ends of the channel member lie adjacent the inner faces of the downturned end flanges 12 of the housing member, so as to facilitate assembly and prevent relative endwise displacement. The upper edges of the channel member are cut away except in region of the notches 28 where these edges abut against the inner face of the curved upper wall of the housing member, as seen in Fig. 5. Notches 31 in the upper edges

of the channel member provide clearance for the riveted ends of the prongs 20. The operating levers 23 fit between the parallel side walls or flanges of the channel member. Notches 32 in the opposite side walls of the housing member provide clearance for the trunnions 27 during assembly.

When the outer ends of the operating levers are depressed by the thumbs or fingers, the levers rock on their trunnions and spring the toggle plates to their upper prong-opening position. The channel member, which forms a back member for the binder mechanism, does not interfere with the spreading of the resilient housing member during this operation. The opening movement is limited by the engagement of the inner edges of the toggle plates with the housing. The binder is closed by pushing together one or more pairs of the complementary prongs, the registration of the prongs being insured by the interfitting lugs and notches 19 and 20 of the toggle plates. While two operating levers are preferred, it is possible to actuate the toggle plates with a single lever.

The transverse slots 16 at opposite sides of the resilient housing or cover plate 10 are each closed at both ends, thus greatly facilitating the plating and polishing of the housing, since the absence of open-ended slots will avoid the interlocking of a group of the housings and prevent the distortion and damage which would be caused by such interlocking. This construction also permits both sides of the housing to be alike for creating a uniform spring pressure, as well as strengthening the housing and avoiding sharp edges and corners which might damage the cover of the binder.

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

1. In a loose leaf binder, the combination of a frame, toggle members carried by said frame and having ring-forming hooks, a lever for springing said toggle members and having trunnions, and a back member extending into said frame and provided with apertures forming bearings for said trunnions, said back member extending longitudinally of said frame and forming therewith an enclosure for said toggle members.

2. In a loose leaf binder, the combination of a resilient housing member having hooked marginal portions, a pair of articulated toggle members retained in said marginal portions and having ring-forming hooks passing through said housing member, a lever for springing said toggle members and having trunnions at opposite sides, and a channel member interposed between said marginal portions and having flanges projecting into said housing member and provided with apertures forming bearings for said trunnions, the web of said channel member forming a back for the housing member.

3. In a loose leaf binder, the combination of a resilient housing member having hooked marginal portions, a pair of articulated toggle members retained in said marginal portions and having ring-forming hooks passing through said housing member, a back member interposed between said marginal portions, a lever fulcrumed on said back member for springing said toggle members, and a fastening element connecting said housing member and back member and passing through said lever.

4. In a loose leaf binder, the combination of a resilient housing member having hooked marginal portions, a pair of articulated toggle members retained in said marginal portions and having ring-forming hooks passing through said housing member, a channel member interposed between said marginal portions and having flanges which project into said housing member, the edges of said flanges engaging the inner face of said housing member longitudinally beyond said toggle members, said flanges having openings, and a lever for springing said toggle members and having trunnions in said openings.

5. In a loose leaf binder, the combination of a resilient housing member, toggle members carried by said housing member and having ring-forming hooks, a channel member having a back-forming web and having substantially parallel flanges projecting into said housing member, and a toggle-springing lever having opposite side edges movably confined between said parallel flanges.

JOSEPH BIRBAUM.