Aug. 6, 1940. R. TAUBER 2,210,106

LOOSE-LEAF BINDING DEVICE

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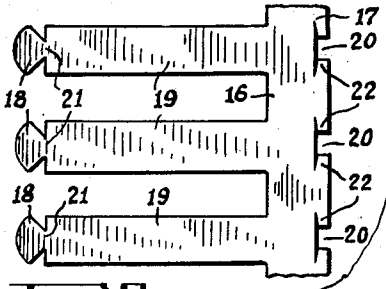


Fig. 9.

Fig. 1.

Fig. 7.

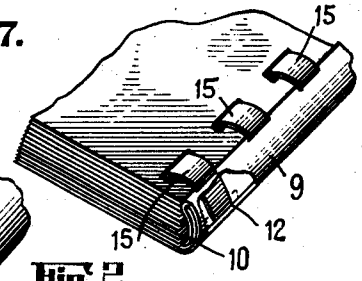


Fig. 2.

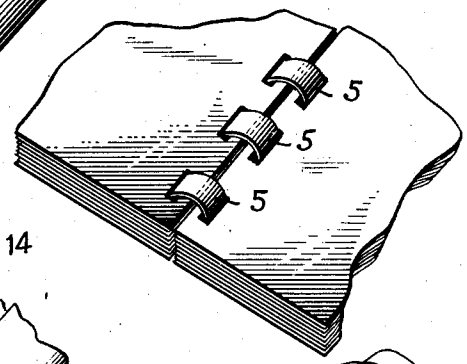
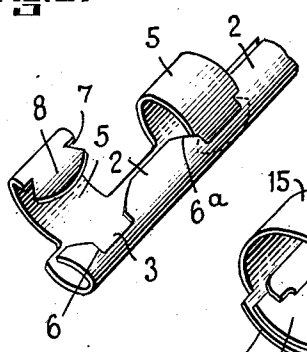


Fig. 3.



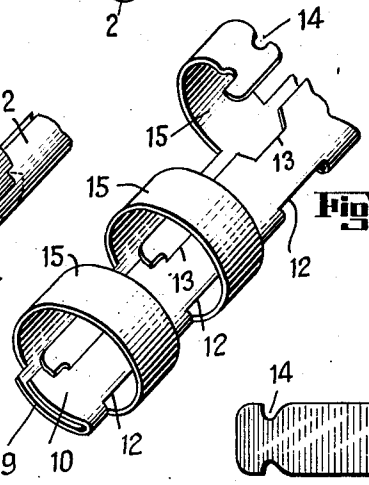


Fig. 5.

Fig. 8.

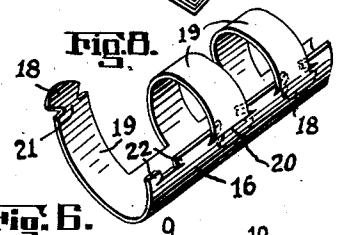


Fig. 6.

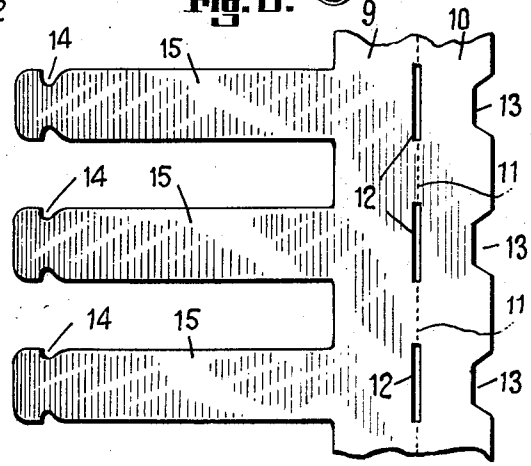
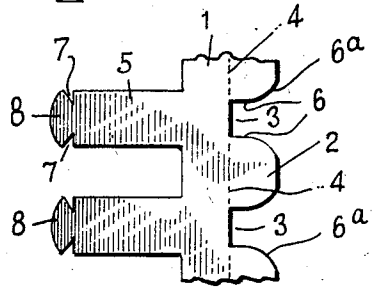


Fig. 4.



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LOOSE-LEAF BINDING DEVICE

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3 Claims. (Cl. 129—1)

This invention relates to loose-leaf binding devices constructed of flexible sheet material and formed from shaped blanks comprising backplates with integral loop-forming tongues whereby separate sheets; assembled groups of sheets; pamphlets; and the like may be securely fastened together at one edge punched to provide the required perforations for receiving the loop-forming tongues. Various attempts have been made with devices of this character to simulate the appearance of a book without at the same time unduly interfering with the opening of the assembled leaves; to have the leaves lie flat when the bound leaves are open and in use; and in some cases, to have the bound papers removable for the purpose of substitution and replacement.

It is therefore the primary object of my invention to provide a loose-leaf binder that will simulate the appearance of a book; that opens and closes easily and smoothly; that does not impart relative endwise displacements to the oppositely arranged leaves at any place at which the assembled leaves may be opened; and in which the leaves lie flat when in open position.

Another object of my invention is to provide a loose-leaf binder in which the leaves may be inserted and removed at will without an extensive adjustment and without subjecting the binder to a heat treatment.

Another object of my invention is to provide a loose-leaf binder having interlocking connections between the backplate and loop-forming tongues which are not permanent; which may be incorporated in a loose-leaf binder constructed of inexpensive material; which enhances the structural self-sufficiency of the tongues in their closed-loop positions and thus renders it feasible to secure a strong effective binder and a dependable detachable connection between backplate and tongues without resorting to the use of material which is relatively inflexible or relatively expensive or requires a heat treatment for the introduction and removal of leaves. A further object of the invention is to provide a novel construction for encasing and masking the interlocking connections between backplate and loop-forming tongues.

Another object of my invention is to provide an improved form of interlocking connection between backplate and tongues in a loose-leaf binder constructed of relatively light or inexpensive material which by reason of the inherent resilience of the material and its reaction on said interlocking connection in the loop-forming positions of the tongues, increases the structural stability of the loops.

With these and other objects in view which will readily appear as the nature of my invention is better understood, the same consists in the novel arrangement and combination of parts which will be hereinafter described and shown in the accompanying drawing.

In the drawing,

Figures 1 and 2 are fragmentary perspective views of one embodiment of my invention showing the binder in closed and open positions, respectively.

Figure 3 is a fragmentary perspective view of the binder detached, one of the tongues being disengaged.

Figure 4 is a fragmentary plan view on a reduced scale of the blank employed for the binder shown in Figures 1, 2 and 3.

Figure 5 is a fragmentary perspective view of another embodiment of my invention, one of the interlocking tongues disconnected and the bound papers omitted for the sake of clearness.

Figure 6 is a plan view of the blank employed for the embodiment shown in Figure 5.

Figure 7 is a fragmentary perspective view of the binder shown in Figures 5 and 6 with the papers included, a portion of the back-plate being broken away to show the masked interlocking connection for one of the tongue.

Figure 8 is a fragmentary perspective view of another form of the binder device, one of the tongues being disconnected.

Figure 9 is a fragmentary plan view of the blank employed for the binder shown in Figure 8.

In a general way, the present invention contemplates a loose-leaf binding device formed from a blank constructed of an integral piece of flexible material, said blank comprising a main body portion which after a partial pre-forming operation provides a transversely curved backplate from which a series of loop-forming tongues project at one edge. Said tongues, in their loop-forming positions, conform substantially to a common surface of curvature including the backplate and in said positions, are under stress due to their deformation from a normal unstressed position in which they form flat portions of the blank. In closed-loop position, the loop-forming tongues and backplate form a well-finished uniformly rounded structure substantially free from projections in which interlocking portions of the backplate and loop-forming tongues are maintained in engagement by inherent resilience of the material.

According to the embodiment of my invention shown in Figures 1, 2, 3 and 4, the blank employed is formed of material having the stated properties, and comprises a main body portion 1 with marginal portions 2 formed by recesses 3 and with weakened lines 4 extending across the portions 2 between the recesses to form a line of folding about which all of said portions 2 are folded inwardly into spaced relation to the inner surface of the backplate strip 1. Presented outwardly from the opposite edge of strip 1 and having common medial axes with said recesses respectively, are a series of spaced loop-forming tongues 5 of greater width than the bottoms of recesses 3 between the straight edges 6, 6, each of said tongues provided with oppositely disposed notches 7, 7, to reduce its width sufficiently to fit between the edges 6, 6. Said notches 7, 7, are preferably shaped and arranged to form dove-tails 8 at the outer ends of the tongues and for the purpose of permitting the ends of said tongues to be easily inserted through the recesses, the edges 6, 6, of said recesses are flared outwardly at 6a, 6a to permit notches 7, 7, to engage straight edges 6, 6, and to interlock therewith as indicated in Figure 3. Preparatory to making the complete set-up shown in Figure 1, the leaves and cover (when a cover is used), are gathered, trimmed, and punched in a well-known manner, the perforations formed by the punching operation in the present instance being of suitable form and size to permit a smoothly constrained movement over the tongues 5. With the leaves and covers thus prepared, the marginal portions 2 are folded inwardly about the weakened lines 4 as indicated in Figure 3 after which, according to Figure 1, the tongues 5 are inserted upwardly through the perforations in leaves and covers, the dovetailed ends 8 of the tongues being overthrust inwardly past the flared edges 6a and anchored in the straight edges 6 of recesses 3 by a short outward movement. In accomplishing this result, the tongues are stressed by flexure and thereby firmly retained in interlocking engagement. Reversal of this procedure serves to release the tongues and permits the facile introduction or removal of sheets.

Referring now to Figures 5, 6 and 7 of the drawing which appertain to the set-up shown in Figure 7, the backplate portion 9 of the blank shown in Figure 6 is defined from a foldable marginal portion 10 by a series of alined elongated weakened lines 11 and slots 12 which provide a folding zone, about which the marginal portion 10 may be readily folded inwardly into spaced relation to the inner surface of portion 9 to form tongue-receiving sockets as shown clearly in Figures 5 and 7. Along its infolded edge, the marginal portion 10 is provided with recesses 13 having a width at the bottom substantially equal to the width of the material between notches 14, 14, near the outer ends of the parallelly arranged loop-forming tongues 15 which project laterally from the backplate portion 9. As shown in Figures 5 and 7, after marginal portion 10 has been folded over into juxtaposition to backplate 9, the slots 12 are presented at the folded edge to receive the outer ends of tongues 15 after said tongues have been passed through the perforated sheets, said outer ends being inserted into the receiving sockets formed between folded portions 9 and 10 when the notches 14 are interlocked with the flared edges of recesses 13. For this purpose, each of the tongues is drawn from its leaf-receiving position shown in Figure 5 to closed-loop position wherein the end of said tongue is interlocked at the edge of folded-in portion 10 under the resilient stress of the material due to its deformation from a position involving substantially no stress.

In the embodiment of my invention shown in Figures 8 and 9, the strip or backplate 16 is provided along one edge with slits 17 of sufficient length to readily admit the rounded dove-tailed outer end 18 of each of the loop-forming tongues 19, portions of the material intervening between said slits and the adjacent edge of the strip, being cut away to provide recesses 20 for admitting the neck 21 at the outer end of tongue 19, depressable wings 22 of the material being arranged to interlock with the dove-tailed end 18 under stress as indicated by different positions of the tongues.

It will be understood that in any of the embodiments of my invention, the binding device can be used in sections of various lengths and embody any desired number of sheet-holding loops. Thus, for example the binder may be constructed with sheet-holding loops in couplets or triplets, the leaves to be bound thereby being punched to provide perforations similar in shape and arrangement to the loops of the binding device. If desired, moreover, the perforations may be punched throughout the length of the collected sheets and bound at one or more places along the perforated edge by couplets or triplets etc. in any desired spacing of the binders.

It will now be understood that I have provided a loose-leaf binder constructed of inexpensive material which simulates a book in appearance; opens out flat without relative endwise displacement of the opposite leaves exposed to view. It will now be seen that the interlocking connections between the loop-forming tongues and the backplate are strengthened by the stress in and due to the flexing of said tongues and that said interlocking connections react to stabilize the loops.

It is also obvious to those skilled in the art that the interlocking connections are releasable with little or no effort and provide simple and effective means for the installation of sheets in the binder and their removal therefrom.

It is seen also that the curvature of the outer wall of the binder is substantially continuous and not appreciably broken by the interlocking connections, this being especially so in those forms in which the interlocking connections are masked within the back-plate.

Having thus described my invention and pointed out the features which are new, what I claim is:

1. A loose-leaf binder comprising a back-plate coincident with the length of the book to be bound, a plurality of uniform, equally spaced projections extending from one edge of said plate, said projections each having a pair of opposed inreaching notches in their outer portions, and shorter projections extending from the opposite edge of said plate, directly opposed to the spaces between the first named projections presenting spaces receptive of the notched edges of the first named projections therein, said plate being curved transversely its length and said projections curved conformably therewith.

2. A loose-leaf binder comprising a back-plate coincident with the length of the book to be bound, a plurality of uniform equally spaced projections extending from one edge of said plate, said projections each having opposed inreaching

notches in their outer portions, said plate having recesses receptive of said projections, said recesses being engageable with the notches of the projections, the outer opposed portion of said plate being infolded to contact the back of the book and cover the extreme end portions of said projections, said plate and projections being transversely and continuously curved.

3. A loose-leaf binder element comprising a flat level strip of flexible material uniformly curved to form a circular sheet engaging loop, one end portion of said strip having inreaching registering notches in its opposite edges, the other end portion having recesses receptive of the first named portion to engage the notches, said other end portion having recesses receptive of the first papers through which the binder element is passed and cover the extremity of the first named end portion of said strip.

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