Nov. 29, 1949 C. E. EMMER 2,489,706

BINDING DEVICE

Filed May 5, 1945 2 Sheets-Sheet 1

Fig. 3

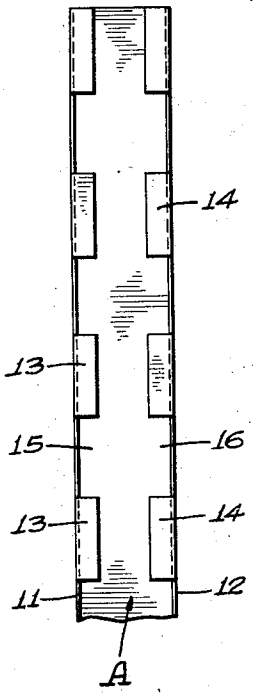


Fig. 4

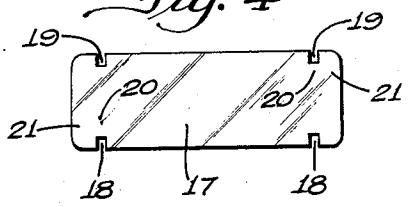


Fig. 1

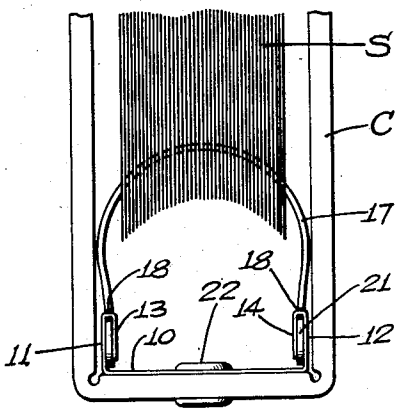


Fig. 5

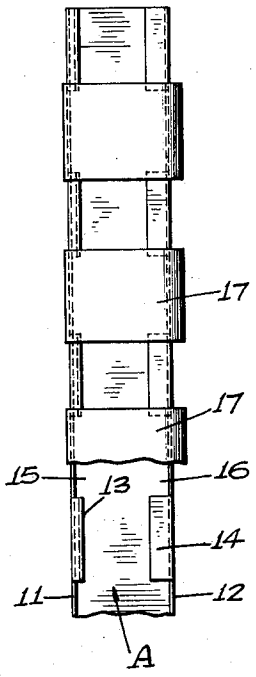
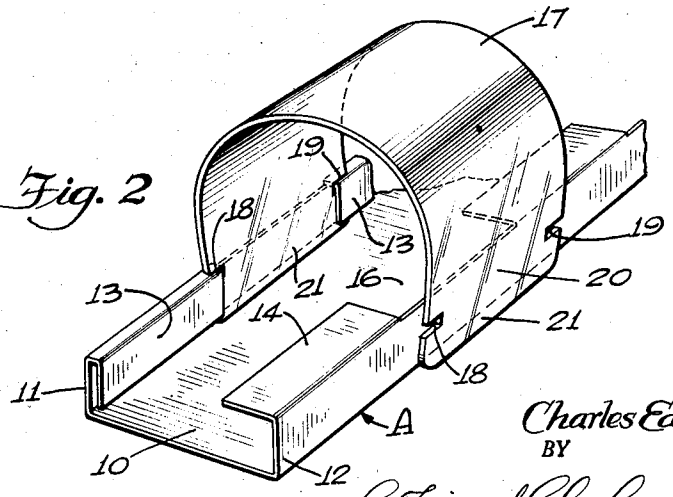


Fig. 2



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Fig. 10

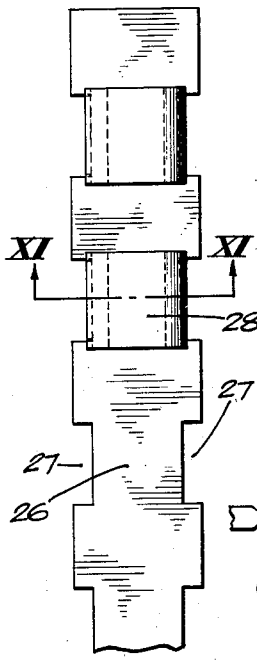


Fig. 11

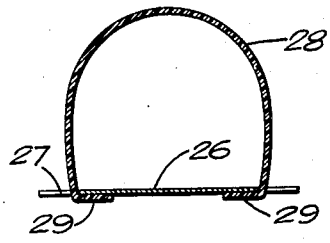


Fig. 6

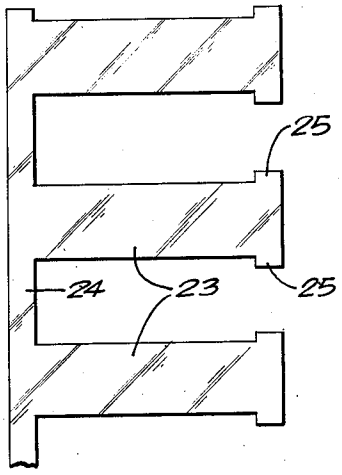
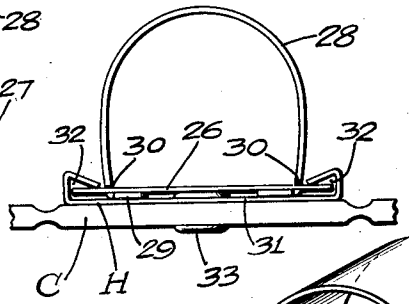


Fig. 9



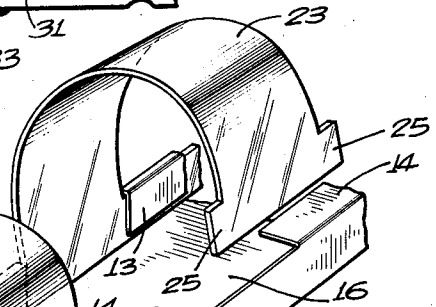


Fig. 7

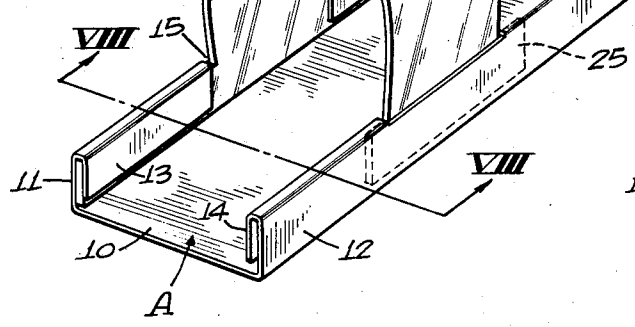
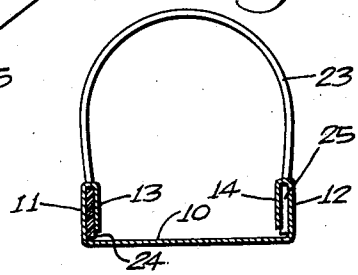


Fig. 8



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Patented Nov. 29, 1949 2,489,706

UNITED STATES PATENT OFFICE

2,489,706

BINDING DEVICE

Charles Edward Emmer, Chicago, Ill., assignor to General Binding Corporation, Chicago, Ill., a corporation of Illinois

Application May 5, 1945, Serial No. 592,226

8 Claims. (Cl. 281—25)

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My invention relates to a binding device for binding together perforated sheets, pamphlets, or the like, and which may be readily mounted in a cover structure.

An important object of the invention is to product a light, economically manufactured unitary binding assembly, comprising an elongated base element and a number of loop elements spaced along and spanning the base element for interlocking engagement with the sides of the base element after the loops have received perforated sheets, pamphlets or the like which are to be bound together.

A further object is to provide binder elements in the form of strips or plates stamped from resilient material such as metal or plastic and bent into loop form, with their ends formed for interlocking engagement with the sides of the base element.

A further object is to provide a base element preferably of sheet material comprising a back wall with longitudinally extending side walls with opposed recesses for receiving the ends of the loop elements and with portions of the side walls adjacent the recesses engageable with the ends of the loop elements for securing loop elements in service position.

Still a further object is to provide a base element to which the loop elements may be secured at one of their ends to side of the base element, with the other ends of the loops primarily exposed for insertion through the perforations of the leaves to be bound, whereafter the free ends may be interlocked with the other side of the base element with the loop elements then in closed service position.

Still a further object is to provide a binding device in which loop elements, after receiving the pamphlets or the like to be bound, are applied to an elongated base element in interlocking engagement with the sides thereof.

The above referred to and other features of my invention are embodied in the structure shown on the accompanying drawings, in which:

Figure 1 is an end elevation of the back portion of a cover with my improved binder assembly therein;

Figure 2 is a perspective view of one end of the binder assembly showing one of the loop elements with one end free for insertion through perforations in sheets to be bound;

Figure 3 is a plan view of a portion of the base element;

Figure 4 is a plan view of one of the loop elements after stamping thereof from sheet material and before bending thereof into loop form;

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Figure 5 is a plan view of a portion of the base element with a number of loop elements secured at one of their ends to one side of the base element with the other ends of the loops free for receiving the sheets to be bound;

Figure 6 is a plan view showing how the loop elements may be stamped from a sheet of material but with a portion of the material remaining as a support and spacer for the loop elements and for interlocking engagement with one side of a base element;

Figure 7 is a perspective view showing the base element and the supporting portion of the stamping of Figure 6 locked to one side of the base element and with the loop elements bent into loop form for interlocking with the other side of the base element;

Figure 8 is a section on plane VIII—VIII of Figure 7;

Figure 9 is an end elevation of a modified binder assembly showing the back portion of a cover structure to which the assembly is applied;

Figure 10 is a plan view of a portion of the base element of the assembly shown in Figure 9 showing how the loop elements are applied thereto; and

Figure 11 is an enlarged section on plane XI—XI of Figure 10.

Referring to Figures 1 to 5, the elongated base element A is of trough or channel form comprising the flat back wall 10 and the longitudinally extending upstanding side walls 11 and 12 from whose upper edges and at spaced intervals flange portions or tongues 13 and 14, respectively, extend inwardly and are separated by spaces or notches 15 and 16, respectively.

The loop elements are primarily in the form of rectangular strips or plates 17 of resilient material such as metal or plastic, the plates at their ends having opposite slots 18 and 19 in their longitudinal edges to form neck portions 20 and head portions 21. These plates can be readily stamped from sheet material, and after stamping thereof they are bent longitudinally into loop form with the openings between their ends slightly wider than the width of the base element, as shown on Figure 2. The loop elements are then applied at one of their ends to one side of the base element. As shown the loops are applied at one of their ends to the side 11 of the base element, the width of the necks 20 being substantially the width of the spaces 15 between the flange portions 13 so that, when the loop elements are applied with one end to the base element side

11, the adjacent ends of the flange portions 13 will receive the notches 18 and 19 and the head 21 will engage against the inner side of the side wall 11 and underneath the adjacent ends of the portions 13. Thereafter, the flange portions 13 are bent down into parallelism with the side wall 11 for engagement of the adjacent ends of the flange portion 13 against the ends of the head 21, as shown in Figure 2, and the loop elements at one of their ends will thus be interlocked with the side wall 11 of the base element to span the base element with their free ends sufficiently displaced from the side wall 12 of the base element so that these free ends may engage through perforations in the sheets S which are to be bound. After receiving the sheets, the free ends of the loop elements are swung inwardly for reception in their slots 18 and 19 of the adjacent ends of the flange portions 14 and the resiliency of the loop elements will then swing the heads 21 at the free ends thereof against the inner side of the surface wall 12, and then the flange portions 14 are bent down against the inner sides of the heads 21 for interlocking of the loop elements with the side flange 12 of the base element, as shown on Figure 1. This binder assembly may then be secured in a cover C, as by rivets 22 through the back wall 10 of the base element and the back wall of the cover.

In the modified arrangement shown on Figures 6 to 8, the loop elements or fingers 23 are part of a stamping a narrow portion, backbone or band 24 of which holds the loop elements in spaced relation. After the stamping operation, the entire stamping is bent transversely for bending of the loop elements into the loop form shown on Figure 7. The base element A shown on Figure 7 is the same as the base element of Figures 1 to 5. The flange portions 13 and 14 primarily extend horizontally inwardly, and the supporting band or backbone 24 for the loop elements is inserted against the inside of the side wall 11 with the inner ends of the loop elements engaging in the spaces 15. The flange portions 13 are then bent down against the inner side of the supporting strip or band 24, as shown in Figure 7.

As shown on Figure 6, the loop members at their outer ends have projections 25, forming heads, which are of the same width as the supporting band 24. After the band 24 is secured to the side wall 11 of the base element, the free ends of the loop members will be sufficiently displaced from the side wall 12 of the base element, as shown at the upper end of Figure 7, so that leaves to be bound may be slipped over the loop elements. The loop elements are then swung down for passage of their projections or heads 25 below the flange portions 14 and these flange portions are then bent down against the inner sides of these projections to lock the closed loops to the side wall 12 of the base element, as shown at the lower end of Figure 7, and in Figure 8. The binder assembly shown in Figure 7 may be secured in a cover C in the manner shown in Figure 1.

In the modified arrangement shown on Figures 9, 10 and 11, the base element is a flat band or strip 26 of sheet material, preferably metal or plastic, with opposed rectangular spaces or recesses 27 in its sides. The loop elements 28 have their end portions 29 deflected inwardly horizontally, and at the junctures of these ends with the loop bodies, slots 30 are provided. The loop elements are of resilient material, either metal or plastic, and when primarily bent to loop form, the

distance between the ends is somewhat less than the width of the base plate between recesses 27. The loop elements are applied with one end thereof to one side of the base element 26, the neck portions between the slots 30 being of a width to engage frictionally with the end edges of the recesses 27 as the slots receive the edges, the end portions 29 then engaging aaginst the bottom of the base element. The loop elements will then be held frictionally with one of their ends to one side of the base element, and the free ends of the loop elements then receive the leaves to be bound and thereafter these free ends are applied in the recesses along the other side of the base element with the slots 30 receiving the end edges of the recesses and the end portions 29 engaging against the bottom of the base element, the springiness of the loop elements holding their ends inwardly in engagement with the base element. This base and loop structure with the leaves thereon is then slipped into a holder H in the form of an elongated strip 31, preferably of sheet metal, whose end portions 32 are bent upwardly and inwardly to provide channels 33 for receiving the edge portions of the base element 26, as shown on Figure 9, this holder being secured to the back of a cover structure C, as by rivets 34, the ends 32 of the loop elements frictionally engaging the base element to hold the binding assembly in place on the holder.

While I have shown and described certain embodiments of my improvement for the purposes of illustration, I do not desire to be limited thereto, as changes may be made without departing from the spirit and scope of the invention as defined in the appended claims.

I claim as my invention:

1. A unitary binding assembly comprising a channel-shaped base element having flange portions primarily extending inwardly from the side walls thereof with opposed recesses between said flange portions, binder elements for receiving leaves to be bound, said binder elements being of springy sheet material bent into loop form, said elements extending at their ends through said recesses and having projections at their ends against which said flange portions when bent down will engage to secure the ends of the loops to the side walls of the base element.

2. A binding assembly comprising a channel-shaped base element having flange portions extending inwardly from the upper ends of the channel side walls with opposed recesses between said flange portions, binder elements for receiving leaves to be bound, said binder elements being in the form of resilient sheet material strips bent into loop form for engaging at their ends in opposed recesses, said binder elements having shoulders at their ends, said flange portions adapted to be bent down around said shoulders to secure the ends of the binder elements against the side walls of said base element.

3. A binder assembly comprising a base element in the form of a sheet material channel bar, binder loops of resilient sheet material for spanning said channel bar and engaging at their ends against the inner sides of the channel bar side walls, said loops having slots in their longitudinal edges at the ends thereof, and tongues on the side walls of said channel bar engageable in said slots to secure the loops to the base element in service position after the leaves or other material to be bound have been applied.

4. A binding assembly comprising a base element in the form of a channel bar, a plurality of

binder loops of resilient sheet material, means for attaching said loops at one end thereof to one side wall of the channel bar with the other ends of the loops primarily free for insertion through perforations of leaves or other material to be bound, the free ends of said loops when the loops are bent down into service position engaging against the inner side of the other wall of said channel bar and having abutments at their ends, and tongues on said other side wall of the channel bar adapted to be bent around said abutments to lock the free ends to said other side wall.

5. A binding device comprising an elongated base element of sheet material having spaced apart recesses in one side opposed to the recesses in the opposite side, binder loop means formed from a single strip of sheet material and having projections at each end thereof extending laterally outwardly from the adjacent portions of said strip, said adjacent portions of said strip having a width somewhat less than the width of said recesses said binder loop means being adapted to engage the base element with said projections extending beyond said recesses of said base element when said strip is formed in a general U-shape, and said base element and said projections being relatively foldable against each other to secure the loop portions in service position with respect to said base element.

6. A binding device comprising an elongated base element of sheet material having spaced apart recesses in one side opposed to the recesses in the opposite side, binder loop means formed from a single strip of sheet material and having projections at the ends thereof extending in opposite directions from the adjacent portions of said strip, said adjacent portions of said strip having a width somewhat less than the width of said recesses for position therein with the projections lying against said base when said strip is formed in a general U-shape, and said base element and said projections being interengageable with each other to secure the loop portions in service position with respect to said base element.

7. A binder assembly comprising a base element formed from an elongated strip of sheet material having a general U-shape and having integral spaced opposed tongues turned inwardly from the free ends of the side walls defining spaced recesses therebetween and binder loop means formed from a single strip of sheet material and comprising a longitudinal connection strip having integral loop strips extending transversely of said connection strip and spaced from each other in alignment with said recesses for seating therein when said binder loop means is formed in a general U-shape, said loop strips having projections at the free ends thereof extending beyond the recesses and under the tongues whereby the connection strip is seatable along one side wall of the base and the projections are seatable along the opposed side wall and said tongues being foldable against said projections and said connection strip to hold the binder loop means in service position.

8. As an article of manufacture for a binder assembly including an elongated base element of the type having opposed longitudinal side walls with spaced tongues projecting inwardly therefrom, a multi-loop binder formed from a single strip of sheet material comprising a longitudinal backbone strip of width corresponding to the height of said side walls and transversely extending integral loop strips longitudinally spaced for position between adjacent tongues, said loop strips having lateral projections at the ends thereof of width corresponding to the height of said side walls, whereby when said binder is seated in said base with the backbone against one side wall and the loop strips positioned between the tongues, the tongues may be folded inwardly against said backbone strip and said projections to hold said strips in service position to bridge the side walls of the base.

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